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## The effectiveness of self-monitoring for a preschooler with aggressive behaviors

Nicole Fay Kimball  
*University of Northern Iowa*

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THE EFFECTIVENESS OF SELF-MONITORING  
FOR A PRESCHOOLER WITH AGGRESSIVE BEHAVIORS

An Abstract of a Thesis  
Submitted  
In Partial Fulfillment  
of the Requirements for the Degree  
Specialist in Education

Nicole Fay Kimball  
University of Northern Iowa  
May 2000

## ABSTRACT

The study was designed to examine the effectiveness of self-monitoring as an intervention for a preschooler with aggressive behaviors. It specifically looked at treatment effects, parent and teacher evaluations of self-monitoring as a technique, the user-friendliness of self-monitoring, and adult time required to implement the intervention.

The subject was Darin, a preschool-aged boy who attended a daycare affiliated with a Midwestern laboratory school. Other subjects included Darin's mother, his two main teachers at the daycare, and multiple aides at the daycare. Darin demonstrated aggressive acts at a high frequency in both the home and school settings. A self-monitoring intervention was developed for and implemented in both settings to decrease the boy's number of aggressive acts.

Results indicated that the preschooler was capable of demonstrating the self-monitoring procedures with the help of the adults, but the intervention did not decrease the frequency of aggressive acts. The researcher's journal data were reviewed, and the frequency and types of journaling are reported. An evaluation of survey data showed that the parent and teachers did not find self-monitoring to be user-friendly. Parent and teacher time required to implement the intervention is reported as well.

Several conclusions are drawn based on the conditions under which the self-monitoring intervention was implemented and the limited data received. The findings of this study may or may not indicate the effectiveness of self-monitoring as a technique for aggression in the preschool population. Multiple hypotheses are generated and recommendations regarding future implementation of self-monitoring are made. Future research should address the effectiveness of self-monitoring as an intervention for preschoolers with aggressive behaviors and maintenance and generalization effects. The

usefulness of conjoint behavioral consultation for the preschool population and time efficient self-monitoring training should also be conducted.

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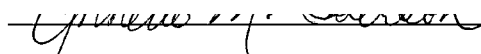
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6/29/99

Date



Dr. Annette Iverson, Chair, Thesis Committee

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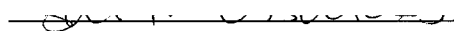
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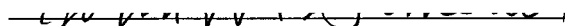
Date



Dr. Susan Epscheidt, Thesis Committee Member

7/29/99

Date



Dr. John W. Somervill, Dean, Graduate College

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# TABLE OF CONTENTS

	Page
LIST OF TABLES .....	vi
LIST OF FIGURES.....	vii
Chapter	
I INTRODUCTION.....	1
Purpose .....	2
Statement of Problem .....	3
Importance of Study .....	6
Limitations of Study .....	9
II LITERATURE REVIEW .....	10
Aggression .....	10
Self-Management.....	12
Self-Monitoring .....	13
Preschool Population and Self-Monitoring .....	19
Summary .....	34
III METHODOLOGY.....	36
Subjects.....	36
Setting.....	38
Instruments/Materials .....	39
Procedures .....	42
Experimental Analysis.....	45



	Page
IV RESULTS .....	47
Progress Monitoring Data.....	47
Reliability Checks .....	50
Journal Data .....	50
Parent and Teacher Survey Data .....	52
Time Analysis .....	53
V DISCUSSION .....	56
Self-Monitoring .....	56
Post Hoc .....	62
Conclusions .....	64
REFERENCES.....	69
APPENDIX A: PROBLEM IDENTIFICATION INTERVIEW.....	74
APPENDIX B: REWARD SURVEY .....	79
APPENDIX C: PARENT AND TEACHER TRAINING MATERIALS .....	81
APPENDIX D: AIDE TRAINING MATERIALS .....	100
APPENDIX E: PARENT AND TEACHER SURVEY .....	107

## LIST OF TABLES

Table	Page
1. Frequencies of Types of Journaling .....	52

## LIST OF FIGURES

Figure	Page
1. Baseline data in the home setting.....	47
2. Baseline data in the daycare setting .....	48
3. Progress monitoring of aggressive acts in the daycare setting .....	49
4. Progress monitoring of replacement behavior in the daycare setting.....	50
5. Time analysis .....	54

## CHAPTER I

### INTRODUCTION

The preschool years are a critical time in which children learn behaviors which carry over to their school years and into their adult lives. Therefore, the aggressive behaviors of preschoolers may warrant interventions. Self-monitoring is a technique that enables individuals to gain awareness of their own actions. It is an intervention that results in the management of one's own behaviors (Coleman, 1996). When self-monitoring is implemented appropriately, preschoolers may be able to decrease the frequency of their aggressive acts.

One of the fundamental goals of education is to encourage children to learn the skills of self-management (Shapiro & Cole, 1994). These skills enable students to complete a task without teacher aid, generalize skills to other settings, become more self-assured, and resolve conflict without adult facilitation. As children develop self-management skills, they become less dependent on external direction and develop the motivation to maintain their own behavior (Shapiro & Cole, 1994).

Self-management, the ability of an individual to regulate him/herself with minimum external guidance, is the goal of most cognitive-behavioral techniques. Cognitive behavioral techniques train students, through self-talk, to develop strategies or to problem-solve for themselves (Coleman, 1996). Specific self-management techniques include self-instruction, self-reinforcement, self-evaluation, and self-monitoring, the focus of this study. Self-monitoring has been used to increase academic performance, on-task behaviors, and social skills and decrease inappropriate behaviors with many populations. This paper reviews the usefulness of self-monitoring to increase on-task behavior and social interactions with the preschool population.

The self-monitoring technique includes student observation of specific aspects of his/her own behavior and recording the presence or absence of the specific target behavior. Self-monitoring is a two-stage process. The student must first notice or be able to discriminate between aspects of his/her own behavior. He/she must then make an objective and accurate self-recording of the behavior (Armstrong & Frith, 1984; Lloyd, Landrum, & Hallahan, 1991; Mace & Kratochwill, 1988; Nelson, 1977; Shapiro & Cole, 1994). The student engages in self-monitoring for the purpose of counting and changing target behaviors (Armstrong & Frith, 1984), such as aggression.

Aggressive acts are not uncommon during the preschool years. An occasional aggressive exchange between preschoolers is normal and expected; however, some young children exhibit abnormally high rates of aggression (Berk, 1998). Definite patterns of aggressive behavior distinguish aggression from an accidental injury (an event that seldom happens) inflicted by one to another (Maccoby, 1980). Preschoolers who are aggressive tend to suffer from poor peer relationships and academic work. Patterns of aggressive behavior may be established in the younger years making early intervention fundamental.

In assessing a preschooler's aggression, it is important to consider the child's developmental age, characteristics, and appropriateness of the behavior. When aggressive acts constitute a definite pattern, self-monitoring may be a useful intervention.

### Purpose

The purpose of this study was to investigate the: (a) effectiveness of self-monitoring for decreasing inappropriate aggression of a preschooler, (b) maintenance of behavior change, (c) generalization of the behavior change, (d) parent's and preschool teachers' evaluations of self-monitoring as an intervention, and (e) amount of adult time the intervention required.

### Statement of the Problem

Aggression in preschoolers has been shown to lead to peer rejection in both preschool- and school-aged children. Children with aggressive behavior tend to be avoided, lonely, and unpopular. They also may have poor classroom behavior and academic work. Early onset of aggression has been linked to adolescent and adult conduct or antisocial personality disorders (Hinshaw & Anderson, 1996). Aggression in young children may become a pattern if it is not given some attention. Thus, early intervention seems essential.

Over the last two decades, self-management interventions have become recognized as effective ways to help persons facilitate their own behavior change. The preschool years are a critical time for children to acquire behaviors and skills that will be expected of them, and self-management techniques have attempted to teach preschoolers to manage their own behavior. A review of the literature on preschool and self-management reflects inconsistent findings (De Haas-Warner, 1992). However, self-monitoring as a self-management strategy has been successful with school-age children and is being considered for the preschool population.

The majority of reports on the efficacy of self-monitoring have dealt with the school-age population. Limited research has been conducted with preschoolers (Shriberg & Kwiatkowski, 1990). Preschool children are able to carry out self-monitoring procedures; however, there is little or no evidence of the ability to maintain and generalize target behaviors.

Another concern is whether self-monitoring is developmentally appropriate for the preschool-age population. According to Piaget's developmental theory, preschoolers are limited by egocentrism and other developmental characteristics that may hinder their

ability to self-monitor. On the other hand, Vygotsky's understanding of self-talk suggests that preschoolers are capable of self-monitoring.

Self-monitoring research with the preschool population has focused on the target behaviors of being on-task and social interactions (De Haas-Warner, 1991, 1992; Harding, Howard, & McLaughlin, 1993; Shearer, Kohler, Buchan, & McCullough, 1996; Strain, Kohler, Storey, & Danko, 1994). It can be concluded that self-monitoring procedures were demonstrated by the preschoolers, but there are questions as to whether it helps maintain and generalize treatment effects. Two of the five cited studies addressed the issue of maintenance, but only one provided strong evidence of maintenance (De Haas-Warner, 1992). Neither of the two studies demonstrated long-term effects of self-monitoring. Although one study utilized the self-monitoring intervention in both the school and home settings (Strain et al., 1994) and another implemented the procedure across classroom settings (Harding et al., 1993), none of the studies considered generalization of the treatment effects to unrelated behaviors or settings. In summary, maintenance and generalization effects of self-monitoring have not been supported in the literature. These effects are important considerations in selecting self-monitoring as an intervention.

Aggression may also be an appropriate target behavior for preschoolers to self-monitor; however, there are no research investigations of preschoolers' ability to decrease aggressive behavior through self-monitoring interventions. This study will examine the: (a) effects of self-monitoring with a preschooler with an aggressive act as the target behavior, (b) maintenance and generalization effects, (c) parent's and teachers' perceptions of the intervention, and (d) adult time required to implement the self-monitoring intervention.

The level of self-management skills exhibited by students varies according to age and ability; however, some beginning skills can be expected of younger children. Interest in developing independence skills in at-risk preschoolers and persons with severe disabilities has increased greatly (Shapiro & Cole, 1994). This study attempted to ensure the development of independent skills by implementing the self-monitoring intervention in both the home and school settings. Conjoint behavioral consultation was used to investigate subject self-monitoring in multiple settings.

### Research Questions

1. Will self-monitoring decrease the frequency of aggressive acts?
2. Will the target behavior be maintained when self-monitoring prompts are withdrawn?
3. Will treatment effects generalize to other settings?
4. How user-friendly is the self-monitoring intervention as reported by the parent and teachers?
5. How will the parent and preschool teachers rate the efficiency and effectiveness of self-monitoring?
6. How much adult time will the intervention require?

### Definition of Terms

For this study, the following definitions were used:

**Aggressive acts:** Behavior that results in crying, falling down or throwing self on the floor, waving hands and shaking body, hitting, or biting.

**Conjoint behavioral consultation:** "A structured, indirect form of service-delivery, in which parents and teachers are joined to work together to address the academic, social, or behavioral needs of an individual for whom both parties bear some responsibility" (Sheridan, 1997, p. 121).



**Consultant:** An individual who provides professional or expert knowledge and advice to those who have a problem or concern. In this particular study, the researcher is the consultant.

**Consultee:** An individual who seeks the knowledge and advice of a professional or expert regarding a problem or concern. In this particular study, the consultees are the mother, Teacher 1, and Teacher 2.

**Daycare center:** A program that provides an environment that encourages and allows children to attain moral, social, intellectual, and physical autonomy. A full day program (10 hours) that provides breakfast, lunch, and snacks. A typical day includes large group activities, learning centers, outdoor play, book time, and rest time.

**Developmentally appropriate aggression:** Aggressive acts that are instrumental, infrequent, and brief.

**Developmentally inappropriate aggression:** Aggressive acts that are hostile, frequent, and/or high in intensity or duration.

**Self-monitoring:** "A self-management procedure that requires the student to observe specific aspects of his/her own behavior and provide an objective recording of those observations" (Shapiro & Cole, 1994, p. 7).

### Importance of Study

Parental concerns about behavior problems and management peak at 3 years of age. These parental concerns include children's tantrums, peer fighting, and frustration tolerance problems (Coie & Dodge, 1998). Although preschool aggression is usually infrequent and brief, it is significant (Shantz, 1987). Early onset of aggression can lead to peer rejection, academic failure, or even a later case of conduct or antisocial personality disorder. Because aggression in preschool years may be detrimental to the child exhibiting the behaviors, it is necessary to develop appropriate interventions. Self-monitoring is a

cognitive-behavioral intervention that may decrease the number of aggressive acts. The intervention has been used primarily with school-aged children. It is important to determine if self-monitoring can be appropriately used by preschoolers and if the treatment effects are maintained and generalized.

Parent and teacher perceptions of self-monitoring and its usefulness are also significant because they are the ones who help the child carry out the self-monitoring intervention. Their perceptions of self-monitoring may influence the way in which it is conducted, therefore, impacting the success of the intervention. Jeffrey (1999) reported the intervention as moderately user-friendly and not at all user-friendly. Because there is little research regarding the user-friendliness of self-monitoring, it is important to continue to investigate this area.

Self-monitoring has been used by other populations to decrease disruptive or problem behaviors such as aggression. Bolstad and Johnson (1972) and Turkewitz, O'Leary, and Ironsmith (1975) found self-monitoring to be an effective intervention for decreasing disruptive behaviors in elementary students. First and second grade students in the self-monitoring groups had 40% fewer disruptive behaviors (talking out or making inappropriate noises, hitting or physically annoying others, and leaving desk to do unassigned or inappropriate activities) than peers in the externally managed groups (Bolstad & Johnson, 1972). Turkewitz et al.'s (1975) results indicated that matching student to teacher ratings was more effective in reducing inappropriate verbalizations, aggression, inattention, and out of seat behavior than teacher ratings alone. This indicated that students, 7 to 11 years, performed better when they self-monitored their own behavior (Turkewitz et al., 1975).

Self-monitoring, in conjunction with other cognitive-behavior techniques, reduced the number of misconduct referrals in at-risk middle school-aged students. An

anger-aggression management curriculum utilizing video symbolic modeling, self-instruction, problem solving, and self-monitoring targeted incidents of aggressive and disruptive behavior in school, anger control, and self-reported antisocial behavior. At follow-up, significant differences in the number of misconduct referrals between treatment and control groups of middle school students were reported (Larson, 1992).

Five brain-injured males, 18 to 28 years of age, were treated with a behavior therapy approach to decrease physical aggression. The behavior therapy included high density reinforcement, reinforcer sampling, environmental control, selection of appropriate responses, inconvenience review, self-control training, and self-monitoring. The approach significantly reduced aggression in all five subjects (Burke, 1988).

Self-monitoring has also been used to decrease aggression in mentally challenged individuals. Jackson and Altman (1996) used a social learning program that included self-monitoring of targeted behaviors, social learning training, and behavior management techniques to significantly reduce physical and non-physical aggression in a 25-year-old mentally challenged male. Based on their research with a mentally challenged individual in the area of self-control, Mahoney and Mahoney (1976) concluded that self-regulatory skills can be developed in areas ranging from personal hygiene and aggression to academic performance. The individual's self-control techniques included self-monitoring, antecedent cue alteration, and consequence changes (Mahoney & Mahoney, 1976).

Research supports the use of self-monitoring alone or in conjunction with other self-management procedures to reduce the occurrence of problem behaviors including aggression. This suggests that self-monitoring may be an appropriate intervention to decrease the number of aggressive acts in the preschool population.

### Limitations of Study

One criticism of single-subject designs is that they have low external validity (Gay, 1996). Because of the nature of this study, the results cannot be generalized to other populations of interest. In other words, the behaviors of a single preschooler cannot be generalized to the entire preschool population. In addition, parent and teacher perceptions cannot be generalized to the populations of parents and teachers. The key to enhancing generalizability of single-subject designs is replication (Gay, 1996). Another concern in employing single subject designs is instrumentation. Because single-subject designs require repeated measurement, it is important to measure the target behavior in the same way each time. If this is not accomplished, the study lacks internal validity (Gay, 1996).

## CHAPTER II

### LITERATURE REVIEW

Aggression is a preschool behavior that may lead to problems later in life if it is not addressed at an early age. Self-monitoring, a self-management intervention, may appropriately be used by preschoolers to decrease their number of aggressive acts. Because of the developmental age of preschoolers, there is controversy regarding whether they can successfully carry out a self-monitoring intervention. Research has been completed with the preschool population regarding self-monitoring in the areas of on-task behavior and social interactions. It has generated mixed results.

#### Aggression

Although it is difficult to draw the line between play and aggression in children as young as 3 to 5 years, all children do express aggression from time to time (Maccoby, 1980). Two forms of aggression emerge by the early preschool years. The most common form of aggression is instrumental aggression when children are not deliberately hostile. Children carrying out this type of aggression want an object or privilege, and push, shout, or attack the person in the way when trying to get it. Hostile aggression, the second form, is meant to hurt. This occurs when a preschooler hits, insults, or tattles on a peer to cause injury (Berk, 1998). Instrumental aggression declines with age as preschoolers learn to compromise. Although it is rare in comparison to friendly interactions, hostile aggression increases between 4 and 7 years (Shantz, 1987).

Preschool children who behave aggressively tend to be the same children who are frequently seen playing happily with their agemates. These are the children who seem to be well liked and often take the lead in activities that everyone enjoys. If aggressive behavior toward others occurs too frequently or continues too long, friendship and affection can be lost. The child runs the risk of being avoided, lonely, and unpopular. By

school-age, the children who frequently fight are unpopular with other children, have few friends or are avoided all together, and become social isolates. Teachers complain that these students do not cooperate with classroom routines, do not pay attention to instructions, and usually do poor academic work (Maccoby, 1980). Individuals, usually boys, who are clearly more aggressive than their peers by the time they are school-age tend to remain so as they grow older (Olweus, 1979). Bierman and Welsh (1997) and Smith, Cowie, and Blades (1998) also indicated that preschoolers' aggressive behavior was linked to peer rejection. In the preschool years, aggressive children tended to be disliked and unpopular (Smith et al., 1998).

Not all aggressive children are rejected. The factors that appear to differentiate rejected from non-rejected aggressive children are the severity and range of disruptive behavior problems exhibited. The aggressive-rejected children are likely to have more severe behavioral problems and are more likely to suffer from stable long-term social adjustment problems (Bierman & Welsh, 1997).

Although an occasional aggressive exchange between preschoolers is normal and expected, some young children display abnormally high rates of aggression (Berk, 1998). Research on conduct disorders and antisocial personality disorder has indicated early onset of aggressive behavior as a characteristic of cases identified in adolescence or adulthood. Argumentative and defiant behaviors in preschoolers often lead to physical aggression and stealing in middle and late childhood and sexual assault, substance abuse, and concentrated property destruction in adolescence (Hinshaw & Anderson, 1996). Aggression, noncompliance, and poor social relationships in children ages 6 to 10 years have been evidenced in adolescence along with school failure and delinquency (Camp & Ray, 1984). Once established, these behavior patterns are difficult to change making early identification and intervention essential. Young children displaying aggressive,

oppositional defiant, or other antisocial characteristics should be identified and worked with as early as the preschool years (Coleman, 1996).

### Self-Management

For many years, methods of classroom control and discipline using teacher-managed contingencies have been emphasized in the schools. Traditional behavior management or behavior modification strategies, involving external manipulation of antecedents and consequences, have been successful for a variety of problems in the school setting. Techniques such as token economies and differential reinforcement have increased positive behaviors; whereas time out, response cost, and overcorrection have decreased negative behaviors. These procedures are used daily by the teachers who are also responsible for monitoring student progress and generating feedback (Shapiro & Cole, 1994).

Although these traditional techniques demonstrated some success, they also possessed several limitations. When managing students using external controls, teachers take away opportunities children need in order to learn how to manage their own actions. Limiting students' involvement prevents them from developing skills needed to be more self-reliant (Cole & Bambara, 1992). Teachers also may not notice a number of their students' behaviors and thus are unable to provide consistent consequences. Less consistent consequences result in slower or nonexistent changes in behavior. Teachers who administer consequences for appropriate behavior may become a cue for these appropriate behaviors. Therefore, appropriate behavior may only occur in the presence of the teacher and may not generalize to other settings (Shapiro & Cole, 1994). Another limitation is that teachers may hesitate to use particular strategies because they are time consuming and difficult to implement (Martens, Witt, Elliot, & Darveaux, 1985). Lastly, teacher-managed interventions have been based predominately on punishment strategies.

Research indicates that external punishment programs have some short-term effectiveness but do not teach the skills needed for long-term behavior change (Shapiro & Cole, 1994).

Many teachers believe they are in control of students' learning because teachers direct the classroom activities, determine the instructional methods, and decide upon consequences for students' behaviors. Although they may not realize it, students are ultimately in control of their own learning. Students who do not realize this develop a dependency on the teacher, and their motivation is externally controlled (Ridley, McCombs, & Taylor, 1994). Currently, the focus of student management appears to be shifting from external control to self-direction and self-motivation.

### Self-Monitoring

#### Elements of Self-Monitoring

The self-monitoring routine employs the components of observation and recording in various ways. This routine consists of four basic components that create variations in the implementation of self-monitoring: (a) presence of cueing, (b) observational (recording) procedures, (c) recording devices, and (d) training (Lloyd et al., 1991).

#### Cueing

Many applications of self-monitoring apply cueing; however, it is not used in all cases. Cueing simply indicates to the student that he/she should carry out the self-monitoring procedures. Cueing often consists of a tape recorder playing tones at frequent, irregular intervals. The tones can also occur less frequently and at regular intervals. The cue serves as a prompt for the student to evaluate and record his/her behavior (Lloyd et al., 1991). Another type of cueing involves marking certain problems on students' work. These marked problems serve as cues for the students to stop and assess the accuracy of their work (Rooney, Polloway, & Hallahan, 1985).



### Observational Procedures

Students' self-monitoring patterns vary according to the observation system that they follow. The following methods are used by students to self-observe: narrations, frequency counts, duration methods, and time sampling (Lloyd et al., 1991; Mace & Kratochwill, 1988). Narrations are utilized in the initial stages of self-monitoring and involve the student recording the occurrence of the target behavior with a description of events preceding and following it (Mace & Kratochwill, 1988). Some students record their behaviors with a frequency count or event recording where they record every occurrence of the target behavior (Armstrong & Frith, 1984; Lloyd et al., 1991; Mace & Kratochwill, 1988). This can only be done with behaviors that occur less frequently and have an identifiable beginning and ending (Mace & Kratochwill, 1988). Duration measures are used to indicate the length of time of the target behavior. It is useful for behaviors when the goal is to alter the time engaged in a particular behavior, such as tantrums (Mace & Kratochwill, 1988). Time sampling is another method of observation. Rather than counting every occurrence of a target behavior, students periodically stop to assess and record their behavior at that time (Armstrong & Frith, 1984; Lloyd et al., 1991; Mace & Kratochwill, 1988). Cueing may be a part of all observational procedures (Lloyd et al., 1991).

### Recording Devices

Self-monitoring is most effective when students overtly record their behaviors (Armstrong & Frith, 1988; Lloyd et al., 1991). Many techniques exist, and they generally fall under two categories. The first category is paper-and-pencil systems. Students make a tally mark for each time the target behavior occurs or record their behavior on a prepared record sheet that provides a structured and consistent format for recordings. The second category of recording methods is counting devices. Some examples of these

devices include moving beads on a string, placing rings on a peg, or moving items from one location to another. The moving of these 'things' represents the presence of the target behavior (Armstrong & Frith, 1984; Lloyd et al., 1991).

### Training

Training students to properly use self-monitoring procedures is an important step in the process. Teachers or school psychologists can teach the self-monitoring technique to students in a single 15 to 20 minute session. Students can be taught the procedures individually or in groups. It is essential that trainers provide explicit explanations of the self-monitoring process and include the following elements in the training: (a) clear and simple definitions of the target behaviors, (b) modeling of the target behaviors, (c) a check for the students' understanding of the target behaviors, (d) a demonstration of the self-monitoring procedures, and (e) an observation of the students practicing the procedures (Lloyd et al., 1991; Mace & Kratochwill, 1988).

### Implementing the Self-Monitoring Program

The presence or absence of cueing, the observation method and recording device used, and the training provided are important to the self-monitoring process. Three additional factors should be considered in the design and implementation of a self-monitoring program: (a) planning a system for evaluating the treatment, (b) planning for the withdrawal of the treatment, and (c) programming for maintenance and generalization (Lloyd et al., 1991).

### Evaluating Treatment

Self-monitoring programs generate a great deal of data about the target behavior; however, these data cannot be used to evaluate the effectiveness of the procedure because students often do not provide an accurate assessment of their own behavior. Data gathered by the students tends to be an overestimation of the occurrence of the

appropriate behavior. Fortunately, this bias in self-assessment is of little concern. Positive changes in students' behavior are often the result of self-monitoring regardless of the students' recording accuracy. It is important, however, for those implementing the program to gather data that will allow an evaluation of intervention effects. School psychologists accumulate such data by collecting it themselves or training an independent observer to do so. The school psychologist or the independent observer engage in periodic observations when and where students are carrying out the self-monitoring procedures (Lloyd et al., 1991).

### Withdrawing Treatment

The self-monitoring technique often involves the use of overt features such as a tape recorder to cue students to assess their behavior or a self-recording sheet to document the presence or absence of the target behavior (Lloyd et al., 1991). Cues and recording devices are important to use when teaching the self-monitoring routine (Heins, Lloyd, & Hallahan, 1986) but are not necessary after students have become skilled in self-monitoring (Hallahan, Lloyd, Kneedler, & Marshall, 1982; Lloyd, Bateman, Landrum, & Hallahan, 1989). Hallahan et al. (1982) and Lloyd et al. (1989) both systematically removed the cueing and recording components, and the students maintained improved levels of the target behaviors. School psychologists and teachers are responsible for deciding when a behavior change is stable enough to remove an element of the self-monitoring program (Lloyd et al., 1991).

### Maintenance and Generalization

Studies have indicated that training and practice in the use of self-monitoring can create a change in the target behavior that can be maintained in the absence of the overt aspects of the program (Lloyd et al., 1991). In a study completed by Heins et al. (1986), follow-up observations made two and one-half months after the termination of

self-monitoring showed maintenance of positive effects. Because no information is available regarding a length of time students need to engage in self-monitoring to achieve maintenance, school psychologists or teachers should independently monitor intervention data to determine desired levels and/or frequencies of target behavior. If treatment effects begin to decline, the practitioner can provide brief retraining sessions (Lloyd et al., 1991).

Two types of desirable generalization are possible with self-monitoring: (a) transfer to untreated but related behaviors, and (b) transfer to other settings (Lloyd et al., 1991). Hallahan, Lloyd, Kosiewicz, Kauffman, and Graves (1979) conducted a study in which self-monitoring treatment effects generalized from one behavior to another. A boy was taught to self-monitor his attending behavior; and, in the process, it improved his academic productivity. Warrenfeltz et al. (1981) found that self-monitoring treatment effects transferred to another setting. Adolescents were taught social skills in a training setting and used self-monitoring to generalize those skills to a vocational classroom. Generalization of the effects of the self-monitoring treatment is as difficult to obtain as generalization of the effects of other school interventions (Lloyd et al., 1991).

### Uses of Self-Monitoring

Self-monitoring has two major uses: (a) behavioral assessment and (b) self-regulated behavioral therapy (Armstrong & Frith, 1984; Mace & Kratochwill, 1988; Nelson, 1977). Behavioral assessment refers to the collection of data during two phases of therapeutic contact. The earlier phase of assessment involves determining the target behavior and its controlling variables. Individuals keep a behavioral diary in which they record problematic events and the circumstances that surround them. Consistent patterns found in this information can lead to the selection of target behaviors and possible intervention techniques (Nelson, 1977). The later phase of assessment is used during baseline and intervention to monitor frequency of the selected target behavior and evaluate

success or failure of the treatment (Armstrong & Frith, 1984; Mace & Kratochwill, 1988; Nelson, 1977).

The second major use of self-monitoring is self-regulated behavioral therapy. Self-monitoring is often therapeutic without additional reinforcement. The simple act of self-recording can cause positive changes in the frequency of target behavior. This therapeutic aspect of self-monitoring is referred to as reactivity (Armstrong & Frith, 1984; Mace & Kratochwill, 1988; Nelson, 1977).

### Reactivity

An observed individual often reacts to being observed by changing his/her own behavior. This is called reactivity or reactivity to observation. When someone else is doing the observing, the target behavior may or may not be the behavior that reacts or changes in response to monitoring. However, when a target behavior is self-observed, it is the behavior most likely to be altered. When observation is completed by another, reactivity typically lasts four to five days. When self-observation occurs, reactivity effects are maintained much longer, up to 30 days (Armstrong & Frith, 1984; Mace & Kratochwill, 1988).

Self-monitoring may also result in behavioral change without the aid of additional intervention strategies. Numerous factors have been identified as potential influences on the occurrence of reactivity: (a) whether behaviors are desirable or undesirable, (b) individual's motivation to change, (c) type of instructions given to individuals, (d) nature of target behavior, (e) use of performance goals, reinforcement, and feedback (f) time of self-recording, (g) nature of the self-recording device, (h) number of behaviors monitored, (i) schedule of self-monitoring, (j) individual's awareness of accuracy, and (k) whether training for accuracy was provided (Mace & Kratochwill, 1988; Nelson, 1977; Shapiro, 1984).

### User-Friendliness of Self-Monitoring

Jeffrey (1999) completed a study that evaluated the user-friendliness of self-monitoring. Two teachers participated in the study, and each used a self-monitoring intervention with a fourth grade student to increase work completion. One teacher, a regular education teacher, did not find self-monitoring to be teacher-friendly. She preferred the class-wide strategies that were already in place in her classroom that did not require individual assistance. This teacher also indicated that the self-monitoring training took too much time from her schedule. The other teacher, a special education teacher, reported self-monitoring to be a moderately teacher-friendly intervention and did not think training took too much time from her schedule. It was hypothesized that the discrepancy in reports of user-friendliness may be due to the teachers' different roles in the school. The special education teacher may have been more familiar with individual interventions and the time required to learn about and implement them than the regular education teacher. Special education teachers expect to teach individuals, whereas regular education teachers expect to teach groups (Jeffrey, 1999).

### Preschool Population and Self-Monitoring

Self-monitoring methods have been used by both adults and children. Because of their developmental age, special considerations regarding self-monitoring procedures are often needed when it is carried out by young children. Younger children may have difficulty remembering how behaviors are defined. They may need additional prompts to remain attentive to the self-monitoring procedures (Shapiro, 1984). Kunzelman (1970) suggested that 'countoons' be utilized. These are simple stick figure drawings that demonstrate the specific behavior that is to be monitored. The children are directed to place a tally mark next to the picture that displays the behavior that occurs. This 'countoon' device may serve as a visual prompt for self-monitoring. It is unlikely that

young children will be able to provide a narrative recording of their behavior. Thus the key in any self-monitoring procedure with these children is that the behaviors must be well-defined and clearly understood. The recording procedures must also remain uncomplicated (Shapiro, 1984).

Over the last two decades, self-monitoring has become more prevalent in the classroom intervention literature. In this time, almost all reports and research notes on the efficacy of self-monitoring have dealt with school-age children. There has been very limited research with the preschool population (Shriberg & Kwiatkowski, 1990). The question of whether self-monitoring is developmentally appropriate for preschoolers has been raised.

### Cognitive Developmental Theory

According to Jean Piaget, children progress through four stages in their thinking, and each stage corresponds to broad changes in the structure or logic of that thinking. These stages of development are: (a) sensorimotor, (b) preoperational, (c) concrete operational, and (d) formal operational (Smith et al., 1998; Wadsworth, 1984). Piaget's theory suggests that individuals possess an inborn capacity to coordinate existing cognitive structures and combine them into more complex systems. Individuals strive for a balance with the environment and reach this equilibrium through the joint process of assimilation and accommodation. Assimilation consists of taking in new experiences and fitting them into existing schemas. Accommodation involves adjusting existing schemas to fit with the nature of the environment. The complementary process of assimilation and accommodation is continual. An individual reaches equilibrium only to be put in disequilibrium by further learning (Smith et al., 1998).

According to Piaget's theory of cognitive development, preschool children are likely to be in the preoperational stage of thought. This stage generally occurs between

the ages of 2 and 7 and is characterized by the development of language and intuitive problem solving. The preoperational child becomes increasingly able to internally represent events, but his/her thinking is characterized by egocentrism (Smith et al., 1998; Wadsworth, 1984). Limitations of preoperational thought that may hinder preschoolers' ability to self-monitor include egocentrism, centration, and irreversibility (Berk, 1998; Santrock, 1995).

According to Piaget's cognitive developmental theory, the most significant characteristic of preoperational thinking is egocentrism. Individuals in this stage are centered on their own perspective and find it difficult to understand that others can view things differently. Thus young children tend to be relatively unaware of other perspectives; this pattern of thought allows them to believe that everyone else perceives, feels, and thinks the same as they do (Berk, 1998; Santrock, 1995; Smith et al., 1998). Piaget's theory suggested that the ability to make inferences about another's thoughts or feelings did not appear until around age 7 years (Smith et al., 1998). If preschoolers are unable to take the perspective of others, can they effectively self-monitor? Self-monitoring requires a child to recognize a behavior that an adult sees as a problem. If preschoolers do not take the perspective of others, they may not understand the target behavior in the same way that adults or teachers do. If they conceive target behaviors differently than adults or teachers, this could hinder their ability to self-monitor.

Centration is another limitation of preoperational thought. Children in this stage tend to focus on only one aspect of a situation, neglecting other important features. If this is so, preschoolers' thinking may center on one aspect of the self-monitoring procedure and reduce their understanding of the process. This idea goes along with another limitation, irreversibility. This notion indicates that preoperational children cannot mentally go through a series of steps and then reverse direction and return to the starting



point. If children can perform the steps of self-monitoring, but not reverse the procedure mentally, their understanding of the process is limited. It is not known whether they need to understand the process as a whole rather than viewing it as separate steps that stand alone in order to benefit from self-monitoring.

### Reinterpretations of Piaget

Over the past two decades, Piaget's cognitive notions of the preoperational child have been challenged. Researchers found that because Piaget's problems contained confusing or unfamiliar elements or too many pieces of information for young children to handle at one time, his data did not reflect preschoolers' true ability (Berk, 1998). Mossler, Marvin, and Greenberg (1976) and Ebeling and Gelman (1994) found that nonegocentric behavior appeared in preschoolers' everyday interactions. Newcombe and Huttenlocher (1992) determined that an awareness of others' points of view were evident by the age of 4 years. This research indicated that preschoolers may possess the ability to take the perspective of others and may not be limited in this respect regarding self-monitoring.

Other research has been conducted in the area of preoperational children's cognitive deficiencies. Results showed that when tasks were simplified and made relevant to the children's everyday lives, they performed better than Piaget suggested (Berk, 1998). Au, Sidle, and Rollins (1993) and Rosen and Rozin (1993) concluded that preschoolers noticed transformations, were able to reverse their thinking, and understood causality in everyday contexts. This indicated that preschoolers may not be limited by centration and irreversibility when engaging in self-monitoring.

### Sociocultural Developmental Theory

Vygotsky's theory of sociocultural development suggested that a complex and interdependent relationship between an individual and his/her social context enabled one to

learn. It emphasized language and stressed that the learning process must be embedded in the context of the child's culture. Social interactions between a child and other members of the child's community determined what thinking and learning capacity he/she acquired. In contrast to the Piagetian perspective that emphasized intellectual growth as a manifestation of the child's unassisted activities, the Vygotskian view suggested that children solved practical tasks with the help of their own speech which was embedded in his/her social and cultural interactions (Smith et al., 1998).

A concept central to Vygotsky's theory is the 'zone of proximal development' (ZPD). The ZPD explains how children learn with the help of others and is the distance between actual level of development and potential level of development that a child can reach with the assistance of others. Because children learn from those who are more knowledgeable, it is not necessary to wait for a child to be 'ready.' Instruction should be at a level above the child's developmental level so it is a challenge, but not too far ahead so he/she can still comprehend it. Therefore, instruction needs to be aimed at the receiver's ZPD (Berk, 1998; Smith et al., 1998). According to this, preschoolers should be able to self-monitor as long as we present the procedures within their social context and gear it to their ZPD.

The Vygotskian perspective also considers the notion of self-talk. Children develop as thinkers and learners through their speech which is formed through social interactions with significant others. These social interactions lead to children's self-talk. It is reasoned that children speak to themselves for self-direction and self-guidance (Berk, 1998). These monologues help children plan and organize their behavior. As children get older, their self-speech is internalized and becomes inner speech or private speech (Berk, 1998; Smith et al., 1998). According to Vygotsky's theory, private speech emerges by the end of the preschool years, around 7 years of age (Smith et al., 1998). Self-monitoring is

an intervention that developed out of the belief that self-talk has an impact on an individual's behavior. If self-talk precedes private speech in the developmental sequence, and private speech emerges at the end of the preschool years, we can assume preschoolers can self-talk. If preschoolers are capable of self-talk, they should be able to self-monitor.

### Information Processing

Based on Atkinson and Shiffrin's theory of information processing, the mind is divided into three basic parts: (a) sensory register, (b) short-term or working memory, and (c) long-term memory. Information first enters the sensory register where it is recognized and briefly retained. Interpretations of the information then move to the short-term or working memory. This is the conscious part of the mental system where material is actively worked on to retain information (Siegler, 1991; Smith et al., 1998). Limitations of the working memory include limited capacity and length of retention and lack of instantaneous retrieval (Siegler, 1991). Long-term memory is the permanent knowledge base. Capacity is considered limitless and retention of information is maintained. Because long-term memory holds so much information, retrieval is sometimes difficult (Siegler, 1991; Smith et al., 1998). This mental system is similar throughout the lifespan; however, the amount retained and processed at one time increases with age (Smith et al., 1998). Two limitations on preschool children's thoughts are attention and memory, important domains involved in the way young children process information. Advances in these two domains increase during early childhood but are not well-developed (Santrock, 1995).

### Attention

The infant's attention has important implications for cognitive development in the preschool years. The child's ability to pay attention changes significantly during the preschool years. Toddlers wander around, shifting their attention from one activity to

another, spending little time focused on any one stimulus. Preschoolers often have difficulty focusing on details and are easily distracted. They potentially become disinterested in a stimulus quite easily and no longer attend to it (Berk, 1998; Santrock, 1995). Children ages 5 and 6 years in their first years of school also exhibit these behaviors (Santrock, 1995). If preschoolers are easily distracted and attend to an activity for only a limited time, they may not remain focused and able to attend to a self-monitoring program.

### Memory

Memory is a central process in children's cognitive development. Preschoolers' recognition memory, the ability to identify a stimulus, is well-developed. Their recall memory is not as strong. They have difficulty generating a mental image of an absent stimulus (Berk, 1998; Santrock, 1995). This may indicate that preschoolers need some type of cueing at all times to be proficient in self-monitoring. If this is so, preschool children cannot independently monitor their own behavior, one of the goals of self-monitoring. Because preschoolers cannot engage in adequate memory recall, they may need adult or teacher reminders to engage in the self-monitoring procedures when external cues are not available.

### Developmental Continuum

Self-monitoring is an individualistic skill that varies according to age and maturity level. It is on a developmental continuum where self-monitoring with assistance is on one end of the continuum and self-monitoring independently is on the other end of the continuum. Younger children are expected to fall near self-monitoring with assistance on the developmental continuum and move along the continuum toward independent self-monitoring as they grow older and mature. Because of their age and maturity level, preschool children are likely to self-monitor with assistance. Even though these young

children do not independently self-monitor, they are carrying out the process and learning the skills necessary to do so in the future. Children who self-monitor at a younger age, regardless of whether it is with or without assistance, are more likely to demonstrate the skills as they age and mature.

## Research

### On-Task

De Haas-Warner (1991) conducted a pilot study to determine if preschoolers could learn to use self-monitoring to increase their on-task behavior during independent prereadiness tasks. The preschool classroom followed a structured curriculum and schedule throughout the day. Prereadiness skill development occurred every day for 15 minutes. It included visual-perceptual-motor tasks involving numbers and letters, coloring, and cutting and pasting. The tasks included classification concepts, number values, and typical preschool art projects.

The subjects for the study were two preschool students from the Easter Seal Society, integrated preschool program with a population of approximately 50% handicapped or at risk children. They were nominated for the study by their teacher because of the high frequency of teacher direction to complete their assigned task and the teacher's general concern for their underdeveloped on-task behavior. Of the two students, one was a 5-year-old female and one was a 4-year-old male. Baseline data were collected for 10 days, and the children demonstrated low on-task behavior without teacher or aid prompts or assistance (De Haas-Warner, 1991).

The preschoolers received self-monitoring training that consisted of one 20-minute session conducted by the researcher. In the training session they were taught three behavioral self-management components: self-talk, self-appraisal, and self-recording. An audiotape emitted a low frequency sound every 30 seconds that cued the subjects to

evaluate their own behavior and record it on a sheet taped to their desks. Students received verbal praise and hugs during the training for appropriate on-task behavior, and the self-monitoring technique was reviewed as needed during the first week. The length of time the students self-monitored was not given. The self-monitoring intervention was successful with both students. The 5-year-old female increased on-task behavior from 24 to 87%. The 4-year-old male increased from 14 to 67% on-task behavior. Fading of the auditory stimulus and self-recording sheets was not executed to determine the maintenance of the self-monitoring strategy. Generalization of the intervention was not measured because this study was conducted at the end of the year, and there were time constraints (De Haas-Warner, 1991).

It is encouraging that the subjects learned the self-monitoring strategy with ease and demonstrated use of it during independent work. The study is limited, however, because no attempts were made to determine if the children could independently monitor their own behavior without the aid of the tape recorder and recording sheet. The study could be improved by including an evaluation of the quality and quantity of the students' work before and during self-monitoring. Also, the students' self-recordings should have been compared to observers' recordings to determine the accuracy of the subjects' appraisals. Replications of the study would strengthen the findings.

De Haas-Warner (1992) conducted a second study that elaborated on the De Haas-Warner (1991) pilot study, focusing on maintenance of on-task behavior when the external controls of the program were faded. Four preschoolers from the Easter Seal Society, integrated preschool program were selected as subjects. The researcher spent 5 days observing the children, and then the researcher and teacher chose 4 children who consistently displayed difficulty with on-task behavior during prereadiness tasks despite the use of behavior management techniques. The first participant was a 5-year-old male

who had a one year delay in his attentional skills, as measured by the Hawaii Early Learning Profile (HELP). He exhibited low rates of on-task behavior and poor work completion. The second subject was a 4-year-old female with a one and one half year attentional skills delay according to the HELP. She spent much of her time watching the work of others rather than engaging in her own tasks. The third subject was a 4-year-old male who demonstrated difficulty with on-task behavior, following directions, and work completion. The fourth participant was a 6-year-old male who remained in preschool for an additional year due to his two year delay in attentional skills and inability to remain on-task to complete his work.

The self-monitoring intervention the 4 preschoolers engaged in included four phases. In Phase 1, the baseline rate of on-task behavior was established, and the students were trained to self-monitor in one-on-one sessions by the researcher. The training session incorporated three behavioral self-management components: self-talk, self-appraisal, and self-recording. Phase 2 consisted of the implementation of the self-monitoring intervention. Phase 3 involved the fading of the student recording. The tone was still present, but the preschoolers did not record their behavior. Phase 4 was the fading of the tone. The preschoolers no longer heard a tone to cue them to evaluate their behavior, nor did they record their on-task behavior. The length of time spent in each phase was not provided. In each phase, the subjects engaged in 15-minute independent prereadiness tasks (De Haas-Warner, 1992).

Results of the study indicated that preschoolers could be taught to use self-monitoring as a strategy to increase on-task behavior during independent work and maintain the target behavior upon the removal of external prompts. Subject 1 had a baseline of 25.9% on-task behavior that increased to 87% during Phase 2. For Phase 3 and Phase 4, he was on-task 92% and 94% of the time, respectively. Subject 2 went from

50% on-task in baseline to 92% on-task in Phase 2. She maintained on-task behavior 95% of the time in Phase 3 and 90% of the time during independent seat work in Phase 4. Subject 3's on-task performance increased from 24% during baseline to 90% in Phase 2. He was on-task 91% of the time in Phase 3 and 94% of the time in Phase 4. Subject 4 improved from 29% on-task at baseline to 93% on-task in Phase 2. In Phase 3 he maintained on-task behavior at 89% and at 96% of the time in Phase 4 (De Haas-Warner, 1992).

The accuracy of self-recording was calculated for three of the four subjects by comparing their self-recordings to observer recordings. Four students from a local high school were trained to be observers. Interobserver agreement was determined by using half of the observation sessions for each preschooler. Kappa coefficients for each observer pair ranged from .54 to 1.0. Four of the six pairs fell in the good to excellent range, and two of the six pairs fell in the fair to excellent range. Kappa coefficient ranges for the observers and Subject 1, Subject 2, and Subject 4 were .65 to 1.0, .61 to .98, and .64 to 1.0, respectively. These suggest minimally acceptable to excellent reliability coefficients. Generalization of self-monitoring was not determined (De Haas-Warner, 1992). This study elaborated on the previous self-monitoring pilot study (De Haas-Warner, 1991) by determining maintenance through the fading of external prompts. It is limited in that it does not consider the generalization of self-monitoring to other tasks or settings.

Another study (Harding et al., 1993) was conducted to determine if self-monitoring was an effective intervention for disabled preschool children's on-task behavior. One preschool boy with multiple disabilities participated, and his on-task behavior was observed in three different settings: independent seat work, group work, and free-choice activities. Baseline data were gathered and self-monitoring was carried



out in the three different settings. The tasks completed in each setting and information regarding any type of training in self-monitoring were not provided. The length of time spent in the three settings and carrying out the self-monitoring intervention was not discussed (Harding et al., 1993).

The subject's baseline for on-task behavior during independent seat work was 68.1%; he improved his on-task behavior to 83% during the self-monitoring implementation. On-task behavior for group work was 83.9% before self-monitoring and increased to 86.9%. Baseline during free-choice activities for on-task behavior was 91.9%, and improved to 96% during self-monitoring. Maintenance and generalization of the effects of self-monitoring strategy were not determined (Harding et al., 1993).

One strength of this study is that it introduced self-monitoring across classroom settings. It did not, however, introduce the procedure across subjects. No attempts were made to determine if the child could independently monitor his own behavior. The generalization of treatment effects was not considered. Although the child made improvements in his on-task behavior, his off-task behavior was not low in all settings prior to self-monitoring. This may have affected the results of the intervention because there was limited room for improvement in the subject's on-task behavior. The accuracy of the student's self-recordings was unknown because they were not compared to observers' recordings.

### Social Interaction

Strain et al. (1994) examined the effects of a self-monitoring intervention on the social interaction of preschoolers with autism. Three preschool boys with autism, 5-year-old Aubrey; 4-year-old Barrett; and 3-year-old Sidney, were the subjects. Ten of their nondisabled peers ranging in age from 3 to 5 years, Aubrey's 3-year-old brother, and Barrett's 8-year-old sister also participated in the study. All preschoolers, disabled and

nondisabled, were provided social skills training by their teachers and mothers that focused on: (a) being the play organizer or suggesting what to play, (b) sharing with others by offering or answering their requests, and (c) assisting others by offering or answering their requests. The preschoolers were taught to self-monitor their social interactions at school and home. The teachers' training at school consisted of eight to ten 10-minute sessions, and the mothers' training at home included four 10-minute sessions.

Self-monitoring occurred in school and at home and consisted of the child placing a foam disk in a cylinder immediately after he engaged in a positive interaction with a peer or sibling. After a designated number of disks were placed in the cylinder, the targeted preschooler and the nondisabled peer or sibling would consume an edible reward. This reward system was systematically faded throughout the self-monitoring process. The boys with autism also were given adult prompts by teachers and mothers to encourage social interactions. The teacher prompts were systematically faded over time, but the mothers were allowed to provide unlimited direction throughout the process (Strain et al., 1994).

Results indicated that self-monitoring was an effective intervention for the social interactions of preschoolers with autism. The three males began the study with either no or minimal interaction with peers. Aubrey completed the study with 39% positive interaction at school, Barrett with 40% positive interaction at school, and Sidney with 36% positive interaction at school. Aubrey increased his social interactions in the home setting from 2 to 40%. Barrett's home social interactions improved from 10 to 35% during self-monitoring. Sidney was not assessed in the home setting because he did not have any siblings. Maintenance of the social interactions without the self-monitoring procedure was not determined, nor was the generalization of the treatment effects to other behaviors or settings (Strain et al., 1994).

Although the edible rewards and teacher prompts were faded throughout the study, maintenance was not determined because fading of the recording device (foam disks) and parent prompts did not occur. The self-monitoring procedure was carried out by the subjects in both the school and home settings, but generalization was not determined. The accuracy of the preschoolers' self-recordings were unknown because they were not compared to observer recordings.

Another study (Shearer et al., 1996) examined the effects of self-monitoring on the activity engagement and social interaction of preschoolers with autism. Three 5-year-old males with autism and nine nondisabled peers ranging in age from 3 to 5 years participated in the study. All children were enrolled in a half-day integrated preschool program. Four to six sessions of baseline data were collected. All preschoolers participated in six 10 to 15 minute social skills training sessions implemented by the researchers. In these sessions they learned to exchange play organizers and share offers in sociodramatic and manipulative activities. Three strategies of initiating interactions, responding to another's overtures, and being persistent in social bids were taught. All the children also engaged in 15 minutes of self-monitoring training. The preschoolers used a string of 12 beads to record their social interactions. When an appropriate interaction occurred a bead was moved by the student (Shearer et al., 1996).

The preschoolers engaged in alternating intervention conditions that consisted of adult and child monitoring procedures. The adult monitoring involved prompts to engage in social interactions. The adult also moved beads to record the positive interactions (social initiation of one child followed by a positive response from another) of each child with autism and provided them with a small reward if they accomplished 6 to 11 exchanges with their peers during an 8-minute session. If 12 or more beads were moved, the children selected an additional reward. The child monitoring included the children

receiving only three prompts from adults to exchange overtures and moving their own beads for completed social interactions during an 8-minute session. The adult again provided rewards for reaching predetermined numbers of interactions. The length of the alternating procedure ranged in time from four sessions in a particular intervention phase with one child to eight sessions in a different intervention phase with another. Lastly, the boys self-monitored. They were not provided any prompts from the adult and recorded their own behavior by moving the beads. Children received a small reward if they correctly moved six or more beads during an 8-minute session. They received an additional reward for 12 or more beads. It was not indicated how long the children self-monitored (Shearer et al., 1996).

The three males with autism were able to self-monitor and engaged in self-recording 50 to 60% of the time. Although the self-recordings only occurred half or slightly over half of the time, they were 99% accurate. According to the results, the three alternating interventions for the boys with autism were equally effective. Although the three boys exhibited high levels of active engagement with their peers during baseline, there was an increase in the preschoolers' social interactions during the intervention phases. Even though the children's independent interactions were maintained throughout the three different interventions, there were differences in the type of interactions. The children's interactions were more meaningful in the earlier sessions when they were prompted by an adult. Their peer interactions became increasingly brief in the later sessions when adult prompts were faded. For example, children engaged in higher quality interactions, such as playing together, in earlier sessions than in later sessions where they made simple toy exchanges. These results indicated that self-monitoring had an impact on the social interactions of the targeted preschoolers, but there were questions as to whether

it maintained the positive behavior. Generalization of the behavior was not evaluated (Shearer et al., 1996).

Although this study demonstrated that preschoolers can self-monitor, it did not determine the long-term maintenance of the target behaviors. The generalizability of the target behaviors to other situations or settings also was not assessed.

### Summary

Self-monitoring is a technique that has become more prevalent in the last two decades. It is a procedure that involves student observation of specific aspects of his/her own behavior and recording the presence or absence of the target behavior. The basis of self-monitoring is to develop internal control so students are internally motivated to maintain their own behavior. Self-monitoring has been used by elementary students to increase on-task behavior, work completion, and social interactions, as well as improve study skills and performance in specific academic areas. It has also decreased inappropriate verbalizations and aggression of elementary students.

To date, the majority of research on the efficacy of self-monitoring has focused on school-age children. Little research has been done with the preschool population. There is the concern that self-monitoring is not developmentally appropriate for preschoolers. According to Piaget's theory of cognitive development, preschoolers are most likely in the preoperational stage of thought characterized by egocentrism, centration, and irreversibility. These developmental characteristics may hinder children's ability to self-monitor. On the other hand, recent findings have challenged Piaget's notions and indicated that students in the preoperational stage may not be limited by these characteristics. Vygotsky's theory of sociocultural development argues that individuals problem-solve through self-talk, a important part of the self-monitoring process. According to this theory, self-talk emerges in the preschool years suggesting that children

of this age can self-monitor. Information processing theory discusses deficits in preschoolers' attention and memory that may affect their ability to self-monitor.

Self-monitoring is a skill that follows a developmental continuum. Each child's age and maturity level need to be considered when determining successful self-monitoring.

Five studies of self-monitoring with preschoolers were reviewed. It can be concluded that preschoolers can conduct self-monitoring procedures, but there is little evidence of maintenance of behavior change. There is no evidence to suggest that treatment effects are generalized to other untreated behaviors or settings. Maintenance of target behaviors and generalization of treatment effects must occur before self-monitoring is reported to be effective.

### CHAPTER III

### METHODOLOGY

#### Subjects

The subjects of the study included Darin (fictitious name), a preschooler enrolled in a daycare center at a Midwestern laboratory school; Darin's mother; Teacher 1 and Teacher 2, two of Darin's main teachers at the daycare; and multiple daycare staff members. Darin was a 4-year-old African American/Caucasian male. His mother and two teachers reported that Darin enjoyed sports, dancing, reading, and helping others. Prior to the study, Darin received speech therapy for a stuttering problem. According to his mother and two teachers, his speech had improved. They also shared that Darin was accepting of others, did little complaining, and preferred one-on-one interactions. The mother and teachers indicated that the preschooler had difficulty controlling his behavior since the beginning of the school year.

Both Darin's mother and teachers agreed that he became aggressive when given adult directions. When things did not go his way or when he was asked to do something he didn't want to do, Darin would throw himself on the floor crying, kicking, hitting, and even biting if someone was in his way.

Darin's mother, Teacher 1, and Teacher 2 tried to get him to verbalize his thoughts and feelings rather than carrying out an aggressive act. This had limited success. Darin communicated his thoughts and feelings more at home than at daycare. They hypothesized this was because Darin communicated more effectively one-on-one than in a group situation. Darin's mother, Teacher 1, and Teacher 2 also tried to change Darin's aggressive behavior by increasing his amount of sleep and providing him with breakfast and snacks. Neither seemed to decrease the frequency of aggressive acts.

Darin's mother was an African American/Caucasian single parent of two boys, Darin and his 1-year-old brother. She was a college student and one of the aides at Darin's daycare. She was not, however, an aide in Darin's daycare room. Darin's mother was concerned about his behavior and believed that it was a bigger problem at daycare than at home. She indicated that Darin became aggressive every day in the home setting; his behavior seemed to be more of a problem in the morning than in the evening. She reported that his behavior varied from day to day. On a scale of 0 to 10, where 0 was no problem and 10 was a severe problem, she rated Darin's aggression a 5. Darin's mother tried using humor and de-escalation of emotions through talking, redirecting, and ignoring to deal with his behavior at home. She experienced some success but not enough to relieve the problem. Darin's mother was familiar with self-monitoring as an intervention but had never used it prior to this study.

Teacher 1 was a Caucasian female who spent the morning and early afternoon in Darin's daycare room. She indicated that Darin became aggressive multiple times each day, but the frequency varied from day to day. On a scale of 0 to 10, where 0 was no problem and 10 was a severe problem, Teacher 1 rated Darin's aggressive behavior anywhere from 5 to 8. She tried redirection, de-escalation through talking, and a matter of fact strategy (i.e., keeping the situation what it is and not blowing it out of proportion) with Darin and experienced limited success. Teacher 1 was familiar with self-monitoring and had used self-monitoring-like procedures before but had never carried out a formal self-monitoring intervention prior to this study.

Teacher 2 was a Caucasian female who spent the majority of the afternoon in Darin's daycare room. She indicated that Darin displayed aggressive acts 3 to 4 times a week, but not every day. On a scale of 0 to 10, where 0 was no problem and 10 was a severe problem, she rated Darin's behavior from 2 to 5. Teacher 2 also reported that



Darin's behavior varied from day to day. She tried humor, redirecting, and de-escalation through talking to alleviate the problem. She experienced limited success as well.

Teacher 2 was familiar with self-monitoring but had never used it as an intervention technique prior to this study.

Other subjects in the study included aides at the daycare center. This population included college students majoring in Early Childhood Education and other related fields.

### Setting

The study took place during the second half of the school year. The parent and teachers who agreed to participate in the study were informed that the study would require approximately 12 weeks. The study was conducted in both the preschooler's home and at his daycare.

Darin lived with his mother and 1-year-old brother. In his home setting, Darin ate breakfast and supper, slept, bathed, played, read, watched TV, and cleaned his room. He also visited his maternal grandmother. Every other weekend, Darin visited his father and paternal grandparents from Friday at 5:00 p.m. to Saturday at 8:00 p.m. According to Darin's mother and two teachers, his time with his father and paternal grandparents was less structured; and he received less sleep when he was there. The self-monitoring intervention was not carried out in this setting.

On week days, Darin attended his daycare center from 7:30 a.m. to 5:30 p.m. He was in the 3 to 5-year-old room. Darin was with Teacher 1 and multiple aides from 7:30 a.m. to 1:30 p.m. During this time, he received breakfast and lunch. He also engaged in large group two times, worked at a learning center of choice, played outside, put puzzles together or read a book, visited the bathroom and brushed his teeth, and rested. Teacher 2 and multiple aides were with Darin from 1:30 p.m. to 5:30 p.m. During this time, he rested, had a snack, visited the bathroom a couple of times, had book time, participated in

large group, played outside, and had quiet time in the room. Large group activities included finger plays, books, music, movement, flannel board stories, language experiences, and other similar activities. When in learning center, Darin could choose among blocks, science, cooking, dramatic play, library, math, puzzles, games, sensory table, music, art, or centers planned around a theme.

### Instruments/Materials

#### Problem Identification Interview

A problem identification interview (PII) was conducted by the researcher in a group setting with the parent and two main teachers (see Appendix A). The parent and teachers identified problem behaviors; chose a priority behavior or behavior of most concern; defined the priority behavior and indicated its frequency, duration, and intensity; identified antecedents and consequences; described previous interventions attempted and their success; specified a required level of performance; described the child's strengths; and selected a baseline data collection method (Kratochwill & Bergan, 1991). At this time, a replacement behavior was also selected by the parent and teachers. Because of the nature of the target behavior and the developmental age of the preschooler, it was necessary to include a replacement behavior as an integral part of the intervention. A goal for reduction in the number of occurrences of the target behavior was set by the parent and teachers as well.

#### Reward Survey

A reward survey was completed by Darin with the help of his mother at the start of the study (see Appendix B). The child identified things he liked to do at home and his favorite food, toy, and TV show.

### Functional Analysis

A functional analysis was completed prior to the start of the intervention to determine the function of the preschooler's behavior. Based on multiple observations and parent and teacher interviews, it was hypothesized that the purpose of Darin's aggression was to gain adult attention. Observations and parent and teacher interviews did not enable the researcher to identify an antecedent to Darin's behavior. The researcher did identify a consequence to Darin's behavior which was adult attention. When Darin would demonstrate an aggressive act, his mother, teachers, or the daycare aides would interact with him.

### Self-Monitoring Training

Parent and teacher self-monitoring training materials included an outline, a case example, and recording device examples (see Appendix C). The outline briefly described self-monitoring and its purpose and gave an overview of the intervention components and procedures. This explanation included training suggestions provided by Lloyd et al. (1991) and Sprick, Sprick, and Garrison (1993). The case example was adapted with permission from Sprick et al.'s (1993) case example. Multiple recording device examples were provided for the parent and teachers. The examples could be used during the child's training and highlighted the necessary components of a recording device.

Aide training materials included a description of self-monitoring, its purpose, and its components and procedures (see Appendix D). Aides were given a clear description of the target behavior, a clear description of the replacement behavior, detailed procedures of how to implement Darin's intervention, and copies of Darin's and the adults' recording devices.

### Replacement Behavior and Consequences

The replacement behavior selected by Darin's mother and teachers was squeezing a stress ball. Darin's mother and two teachers helped him make a stress ball out of balloons and salt during his self-monitoring training. Carrying out the replacement behavior was to result in positive adult attention (e.g., "Good choice Darin. Please put a sticker on your sheet.").

### Recording Devices

Two recording methods were used. The first recording method was used by Darin to record the number of times he chose to do his replacement behavior. This involved Darin placing a sticker on a daily recording sheet each time he demonstrated the replacement behavior (see Appendix D). The second recording method was used by Darin's mother, two teachers, and aides. This included making a tally mark on the daily recording sheet each time Darin displayed the target behavior (see Appendix D).

### Verbal Cues

Two verbal cues were used. Darin was initially cued by his mother, two teachers, and aides to do the replacement behavior (i.e., "What should you be doing, Darin? Make a good choice."). The second verbal cue was used to remind Darin to record his replacement behavior. This cue was also given by his mother, two teachers, and aides.

### Parent and Teacher Survey

A survey was administered to both the parent and teachers at the termination of the study (see Appendix E). It was adapted with permission from Jeffrey (1999). The survey consisted of questions about user-friendliness, efficiency, and effectiveness of self-monitoring as an intervention. The parent and teachers read statements and circled a number on a 5-point Likert-type scale.

## Procedures

### Anecdotal Records

The researcher, parent, and two main teachers were to record their thoughts about preparing for and conducting the self-monitoring intervention in a journal. Journaling began when baseline data were collected and continued until the study was terminated. The researcher's journaling focused on thoughts about conducting the self-monitoring training with the parent and teachers and aiding the parent and teachers with the intervention. It also included documentation of the parent and teachers' weekly estimates of the time invested in the self-monitoring intervention and contacts made by the researcher with the parent, Teacher 1, and Teacher 2. The parent and teachers were asked to write in their journals when possible and to focus on their thoughts and opinions regarding self-monitoring as an intervention in the home and at daycare.

### Baseline

After the problem identification interview was completed, the researcher held a brief informative meeting for the parent, teachers, and aides that focused on the definition of the target behavior, the method of baseline data collection, and the expected course of the intervention. The parent, teachers, and aides were to collect baseline data for 2 weeks. Baseline data collection involved counting the number of occurrences of the specified target behavior.

The researcher observed Darin's behavior three times in the daycare setting during the baseline phase. This provided the researcher with a clear picture of the target behavior that better enabled her to help the parent and teachers develop an appropriate self-monitoring intervention for Darin. During baseline, Darin's mother helped him complete a reward survey. The researcher was available to assist the parent. Immediately

following baseline data collection, training sessions on self-monitoring were provided to the parent, teachers, and aides.

### Self-Monitoring Training

Self-monitoring training was provided by the researcher to the parent and teachers during a 1 hour session at the daycare facility. The parent and teachers learned how to teach the preschooler to self-monitor, as well as how to implement the intervention themselves. The researcher provided a separate educational session to the daycare aides in which they acquired the skills to implement the self-monitoring intervention. Because the main teachers could not be in the room and interacting with Darin at all times, it was important to educate the additional staff as well.

Materials which described self-monitoring, its purpose, and its components and procedures were provided for and discussed with the parent and teachers in their session. The parent and teachers also were provided an outline of how to educate children in self-monitoring. A case example adapted from Sprick et al. (1993) was presented to the parent and teachers to illustrate the intervention components and training procedures. Multiple recording device examples were provided to aid comprehension and for use with Darin in his training. Role playing between the researcher and parent and teachers was used to ensure that parent and teachers had a clear understanding of the self-monitoring and child training procedures.

After their training, the parent and teachers prepared individual training sessions for the preschooler based on the provided materials. The individual training was conducted by the preschooler's mother in the home setting and by both of the teachers in the daycare setting.

Aide training was provided by the researcher and occurred at the same time the parent and teachers provided training to the preschooler. Training materials included a

description of self-monitoring, its purpose, and its components and procedures. They also were given clear descriptions of the target behavior and replacement behavior, detailed procedures of how to implement Darin's intervention, and a copy of Darin's recording device.

### Intervention Phase

The intervention phase began after Darin demonstrated to parent and teachers that he could perform the self-monitoring steps accurately. The preschooler recorded the presence of the replacement behavior when cued. At the same time, the parent, teachers, and aides recorded the occurrence of the target behavior by making a tally mark on a recording sheet. Darin was to carry out the self-monitoring intervention at goal attainment level across 3 consecutive days.

If Darin failed to increase the frequency of his replacement behavior during self-monitoring, a reward system was to be added to his intervention program. The information from the reward survey would be used to develop the reward system. Because rewards were not used in the daycare setting, they would be given at home.

### Progress Monitoring

Darin, with the assistance of his mother in the home setting and his teachers in the daycare setting, was to graph his behavior daily. This involved figuring percentages of appropriate behavior and recording that percentage on a bar graph. Periodically, the parent, teachers, and aides were to record the occurrence of Darin's replacement behavior. This would be used to make reliability checks. The researcher met with the parent and teachers once a week, or as needed, to review progress. At this time, the researcher also collected new data. These data were to be entered into a computer, and slopes of improvement were to be calculated.

### Fading Intervention Components

The self-monitoring intervention components were to be systematically removed when the preschooler reached stable goal attainment. The researcher, parent, and teachers were to collaboratively determine which components would be removed over what amount of time. Darin's progress with and attitude toward the intervention would influence these decisions.

Because a stable goal was not reached, the self-monitoring intervention was terminated. The researcher continued to work with the parent and teachers on Darin's aggressive behavior until the end of the school year. At that point, the researcher made suggestions for future interventions.

### Generalization

If time would have allowed, and if there was an opportunity to do so, generalization of the intervention effects would have been evaluated. This would have involved assessing the preschooler's target behavior in another, untreated setting.

### Follow-Up

At termination of the intervention, the parent and teachers completed a survey to rate the user-friendliness, efficiency, and effectiveness of self-monitoring. The survey required reading statements and circling a number on a 5-point Likert-type scale. Following the completion of the survey, the researcher met with the parent and teachers to discuss the self-monitoring project and to clarify any contradictions between the journal entries and survey ratings.

### Experimental Analysis

Analysis consisted of visual interpretation of graphic displays. The graphs included: (a) the number of occurrences of the target behavior during baseline, (b) the number of occurrences of the target behavior during the intervention phase, and (c) the



number of occurrences of the replacement behavior during the intervention phase. Slope of improvement was calculated to assess intervention effects. Journal entries were analyzed qualitatively. Descriptive statistics were used to report parent and teacher rating scale responses. Time required by the parent and teachers to implement this intervention was calculated.

## CHAPTER IV

## RESULTS

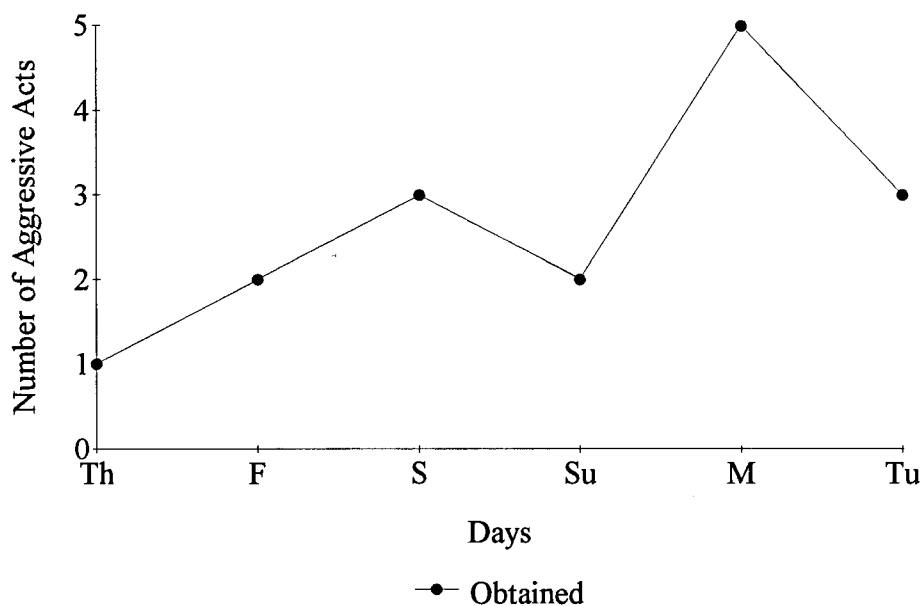
Progress monitoring data in both the home and daycare settings are presented. Journal and survey data are described. Time required of the parent and two teachers to carry out the self-monitoring intervention is reported.

## Progress Monitoring Data

Home Setting

Baseline data were to be collected for 2 weeks or 14 days all day during all activities. Data were collected for 6 days by Darin's mother. Baseline data for aggressive acts in the home setting ranged from 1 to 5 times a day. The aggressive acts were not contingent upon the time of day or activity. Baseline results are presented in Figure 1.

Figure 1. Baseline data in the home setting.

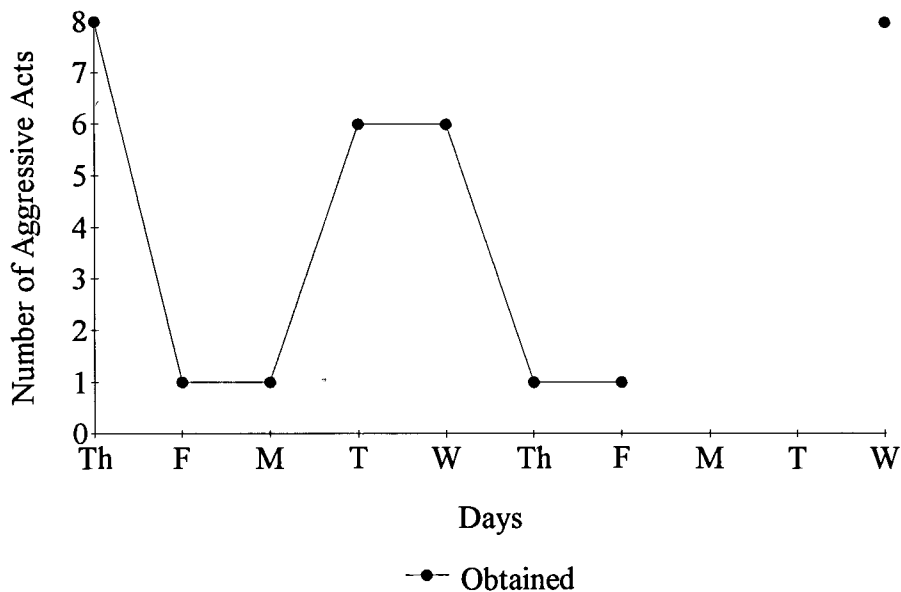


During the self-monitoring phase of the study, Darin's mother reported that he no longer demonstrated aggressive acts, and she did not carry out the intervention. Consequently, there was no home-based progress monitoring data.

### Daycare Setting

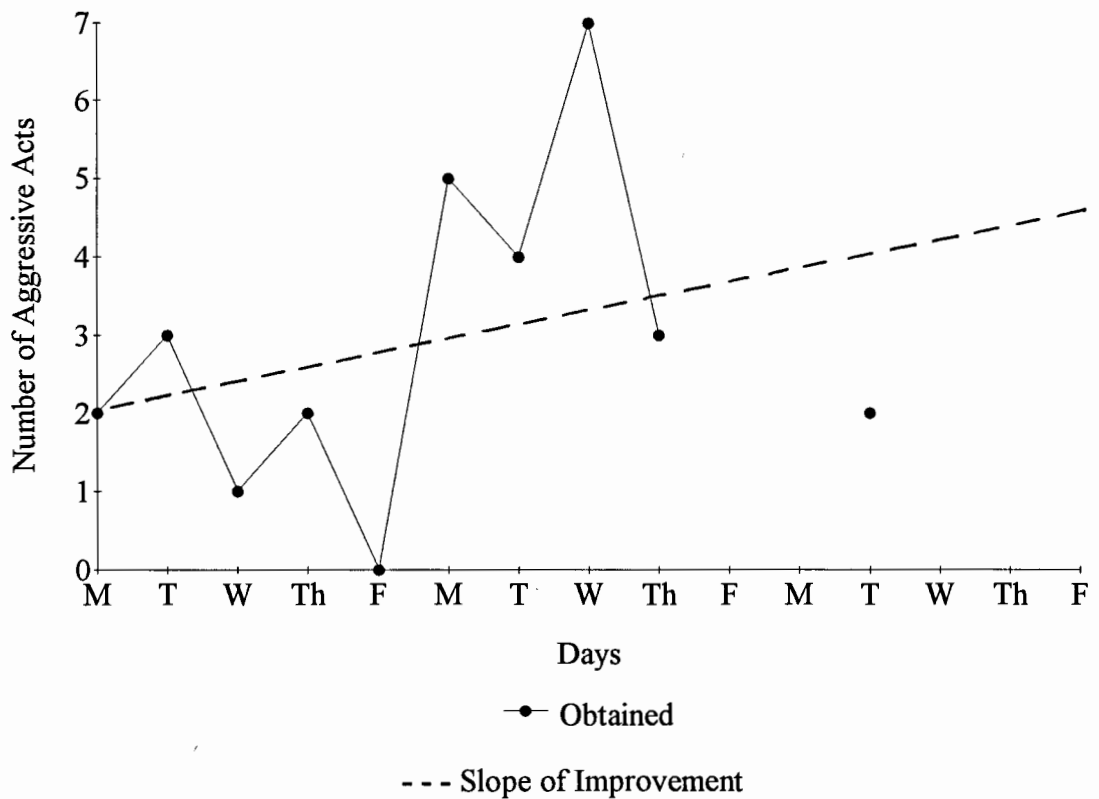
Baseline data were to be collected for 2 weeks or 10 school days at the daycare all day during all activities. Aggressive acts were recorded 8 of 10 days by Teacher 1, Teacher 2, and the daycare aides. Baseline data for aggressive acts in the daycare setting ranged from 1 to 8 times a day (see Figure 2). The majority (90%) of the aggressive acts occurred between 7:30 a.m. and 1:30 p.m. and were not contingent upon the activity.

Figure 2. Baseline data in the daycare setting.



Teacher consultees collected data for 10 days and independently terminated the intervention because they were experiencing increases in the frequency and degree of Darin's behavior. The number of aggressive acts ranged from 0 to 7 a day (see Figure 3).

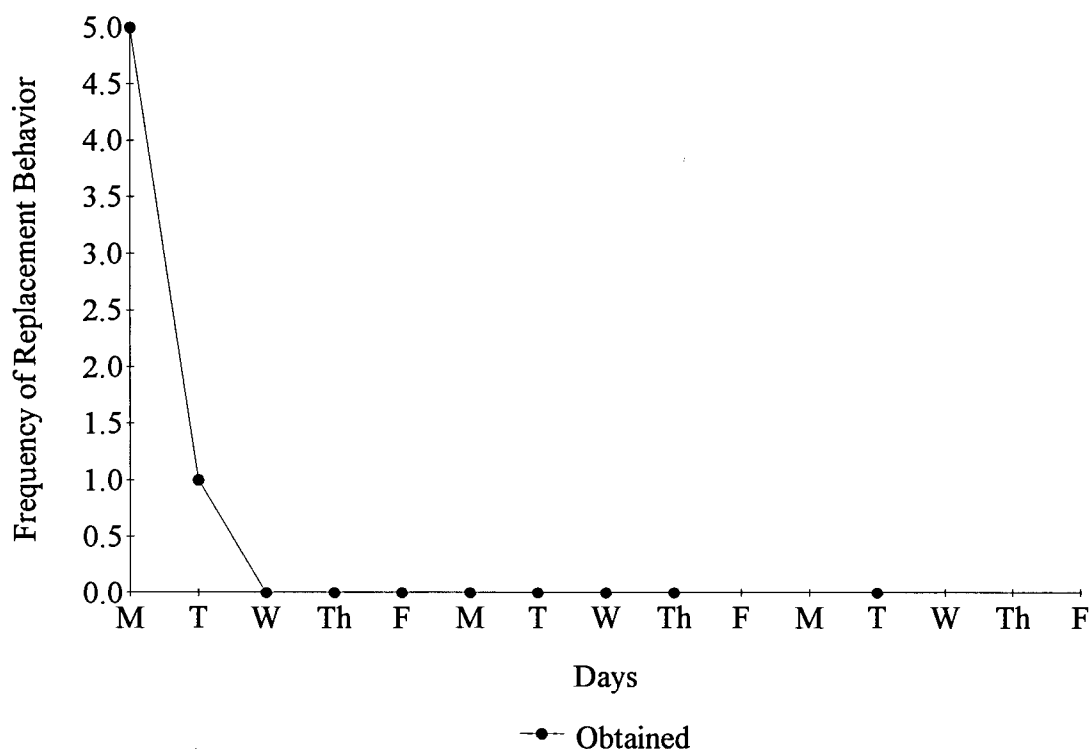
**Figure 3.** Progress monitoring of aggressive acts in the daycare setting.



The slope of improvement line in Figure 3 shows that Darin's number of aggressive acts increased during the intervention phase of the study. Teacher 1, Teacher 2, and daycare aides reported that Darin became defiant during the intervention when he was given the verbal cue to elicit his replacement behavior.

The frequency of the replacement behavior ranged from 0 to 5 times a day. These results are presented in Figure 4. In Figure 4, it can be seen that Darin demonstrated use of the replacement behavior with consultee assistance during the first two days of the intervention. Because the self-monitoring intervention was terminated after 10 days, there was no opportunity to study maintenance and generalization effects.

Figure 4. Progress monitoring of replacement behavior in the daycare setting.



#### Reliability Checks

Both teachers and the aides cued Darin to record the occurrence of his replacement behavior and monitored him as he did it. The self-monitoring intervention was implemented for 10 days. Darin never demonstrated the use of the replacement behavior independent of adult cues. Because of this, no reliability checks were made regarding Darin's recording accuracy.

#### Journal Data

The researcher's journal data were examined. Journals were not kept by Darin's mother, Teacher 1, and Teacher 2 due to time constraints and lack of interest in doing so. The majority of the researcher's journal consisted of documentation of contacts made with and assistance provided to the mother and teachers. Frequency and type of contacts will

be reported. The researcher's thoughts about conducting the self-monitoring training with the parent and teachers and aiding the parent and teachers with the intervention will also be provided.

The frequency of contacts made by the researcher with Darin's mother, Teacher 1, and Teacher 2 were recorded by means of journaling. Journaling began the first week of collecting baseline data and continued until the termination of the self-monitoring intervention. The researcher made three contacts during Week 1, one during Week 2, five during Week 3, four during Week 4, three during Week 5, and four during Week 6 for a total of 20 ( $\bar{x} = 3.5$ ).

The researcher's entries were analyzed for fit into one of three categories: need to follow-up or follow-through, providing assistance, and other. The need to follow-up or follow through refers to the researcher's need to make contacts with Darin's mother and teachers to ensure the use of the self-monitoring intervention. Providing assistance indicates that the researcher created materials and supplied the adults with the intervention materials. Other refers to the activities the researcher engaged in to fulfill her role as the consultant in the intervention process. These include observing the preschooler in his daycare room, training the parent and teachers, and collecting data sheets.

Twenty journal entries were made by the researcher over a 6-week period during the self-monitoring intervention. Nine entries involved following-up or following-through, three entries were providing assistance, and eight entries fell in the other category. Results are presented in Table 1.

Table 1

Frequencies of Types of Journaling

Need to Follow-Up or Follow-Through	Provide Assistance	Other	Total
9	3	8	20

The researcher thought the parent and teacher self-monitoring training went well. She concluded that Darin's mother and teachers had a strong understanding of the intervention and was confident in their ability to train Darin and implement the intervention. The consultees showed an interest in self-monitoring and displayed a strong desire to help Darin at the start of the study. Over the 3 weeks of implementing self-monitoring, the researcher reported that parent and teacher interest and enthusiasm began to fade. She felt as though the mother, teachers, and aides were going through the motions of the intervention but did not believe in what they were doing. The researcher made several contacts with consultees and provided support and encouragement.

Parent and Teacher Survey Data

The parent, Teacher 1, and Teacher 2 completed surveys on the use of self-monitoring. They were required to rate seven statements on a scale of 1 to 5 with 1 representing not true at all, 3 representing moderately true, and 5 representing very true.

Parent

Darin's mother rated the self-monitoring training as a 4 regarding its helpfulness in implementing the intervention and a 2 as far as requiring too much time from her schedule. She rated her ability to construct an intervention for the child in a short amount of time a 3. The intervention's effectiveness for the child's needs was rated a 2. The statement

regarding the use of self-monitoring with other children with behavioral concerns was scored a 2, and her ability to independently implement self-monitoring in the future was rated a 3. The parent-friendliness of self-monitoring was rated a 2.

### Teachers

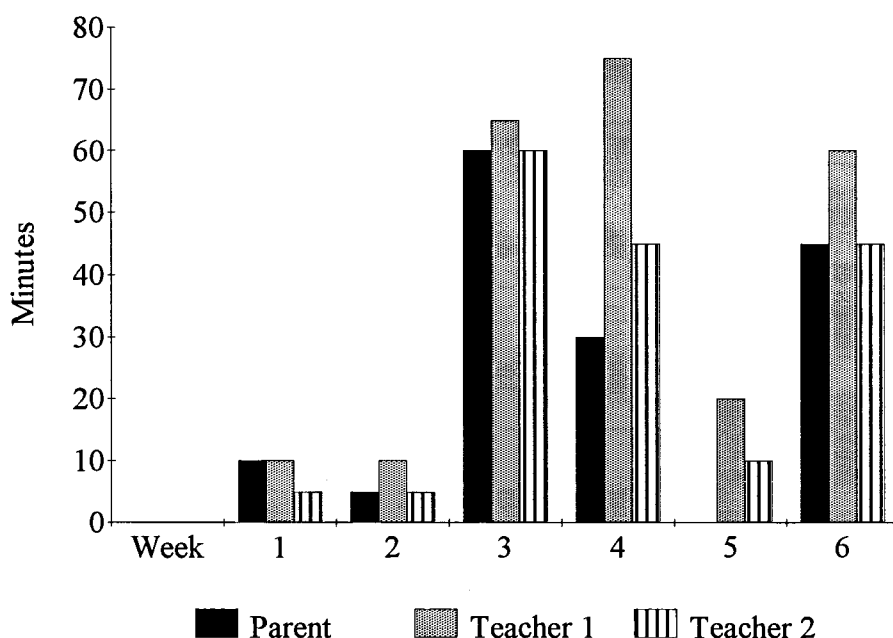
Teacher 1 and Teacher 2 both rated self-monitoring training as a 4 regarding its helpfulness in implementing the intervention. Teacher 1 rated the training a 5 as far as requiring too much time from her schedule. Teacher 2 rated this a 4. Both teachers rated their ability to construct an intervention for the preschooler in a short amount of time as a 5. They both also rated the effectiveness of the self-monitoring intervention for the child's needs a 1. The statement regarding the use of self-monitoring with other children with behavioral concerns was scored a 3 by both teachers, and their ability to independently implement self-monitoring in the future was rated a 4. Teacher 1 rated the teacher-friendliness of self-monitoring a 1. Teacher 2 scored the teacher-friendliness of the intervention a 2.

### Time Analysis

Time required from Darin's mother, Teacher 1, and Teacher 2 was recorded weekly. Darin's mother put in a total of 2 hours and 30 minutes (150 minutes) for 6 weeks. The first week included 4 days of collecting baseline data and required 10 minutes. Week 2 involved 2 days of baseline data and required 5 minutes. Parent and teacher training occurred during Week 3 and took 1 hour. Week 4 involved training Darin in how to do self-monitoring and required 30 minutes of her time. Because Darin's mother did not carry out the intervention, no time was used during Week 5 for self-monitoring. During Week 6, Darin's mother, Teacher 1, Teacher 2, and the researcher had a meeting to change Darin's intervention. This meeting lasted 45 minutes. Results are presented in Figure 5.



**Figure 5.** Time analysis.



Teacher 1 put in a total of 4 hours (240 minutes) during the self-monitoring intervention procedures. Week 1 consisted of 2 days of baseline data and required 10 minutes of her time. Week 2 included 5 days of collecting baseline and took 10 minutes. Week 3 included 1 day of baseline data collection and parent and teacher training in self-monitoring. This required 1 hour and 5 minutes. Teacher 1 trained Darin in self-monitoring and carried out 5 days of the intervention during Week 4 which required 1 hour and 15 minutes of her time. Week 5 included 4 days of the self-monitoring intervention and required 20 minutes. Week 6 consisted of 2 days of intervention and a meeting with Darin's mother, Teacher 1, and the researcher to change the intervention. This required 1 hour (see Figure 5).

Self-monitoring required a total of 2 hours and 50 minutes (170 minutes) of Teacher 2's time. Her weeks included the same activities as Teacher 1's weeks. Week 1

required 5 minutes, Week 2 required 5 minutes, Week 3 required 1 hour, Week 4 required 45 minutes, Week 5 required 10 minutes, and Week 6 required 45 minutes (see Figure 5).

## CHAPTER V

### DISCUSSION

#### Self-Monitoring

The focus of this study was to determine if self-monitoring was an effective intervention for decreasing the frequency of aggressive acts of a preschooler. Adult time required to implement the intervention was recorded. Parent and teacher evaluations of the self-monitoring intervention at the termination of the study were conducted, and the user-friendliness of self-monitoring was determined.

Baseline data reflected the frequency of Darin's aggressive acts in both the home and daycare setting prior to the intervention. It was not necessary to collect baseline data for 2 weeks. Because the aggressive acts were occurring at a high frequency, three data points would have been sufficient. Observations completed by the researcher verified the severity of the preschooler's aggressive behavior. These data supported the need for an intervention.

The self-monitoring intervention was independently terminated by Darin's mother and both teachers approximately 2 1/2 weeks after the start of the intervention because they believed Darin became more physically aggressive toward the staff after the intervention began. Based on the limited data collected over the course of the intervention, it appears as though the self-monitoring intervention used was not successful at decreasing the preschooler's aggressive acts. Because the data collection procedures were implemented inconsistently and the intervention was terminated at such an early date, it is difficult to draw conclusions regarding the effectiveness of self-monitoring as an intervention for decreasing the number of aggressive acts of preschoolers in general. No conclusions can be made regarding the effectiveness of self-monitoring as an intervention in the home setting because it was not carried out. There was no opportunity to measure

maintenance of the target behavior once the self-monitoring prompts were withdrawn; nor was there an opportunity to analyze the generalization of treatment effects to other settings.

One possible explanation for the lack of success with the self-monitoring intervention is inconsistency. First of all, there were several adults involved in Darin's self-monitoring intervention. Although the intervention was presented in explicit detail and the mother, Teacher 1, Teacher 2, and aides received specific definitions and detailed steps and instructions to implement Darin's self-monitoring intervention, it was difficult to maintain implementation consistency. Secondly, Darin's mother did not carry out the self-monitoring intervention in the home.

Another possible explanation for the intervention's lack of success is that Darin's brother was in the hospital the second week of self-monitoring. Darin was staying with his maternal grandmother and seeing little of his mother and younger brother, a big adjustment for a 4-year-old boy. His brother's hospitalization created many changes for him; therefore, he may not have been able to focus on his behavior and the self-monitoring intervention.

A third explanation is the over-use of the self-monitoring intervention. The intervention was implemented all day during all activities at the request of Darin's mother, Teacher 1, and Teacher 2. Baseline data did not reflect a particular activity as an indicator of aggressive behavior, but it did show that aggressive acts were more frequent in the morning. Darin's mother and two teachers determined that he should self-monitor all day. This may have been too much for Darin because of his age. This particular issue was discussed at the termination meeting for the self-monitoring intervention. It was hypothesized that Darin may have been avoiding his replacement behavior because the

self-monitoring procedure was cumbersome and long. It took too much time out of the activity in which he was engaged. He just simply wanted to return to the activity.

A fourth explanation for the lack of success of the self-monitoring intervention is the absence of choices for a replacement behavior. The intervention may have been more successful if Darin were given an opportunity to make choices regarding his replacement behavior. According to the intervention that he was expected to follow, Darin needed to squeeze the stress ball in order to be successful. This was the only appropriate behavior that would allow him to see success. If Darin were given multiple appropriate behaviors to choose from (rather than limiting him to squeezing the stress ball), he may have selected to demonstrate a replacement more often, therefore, experiencing more success. Because Darin did not have any control or ownership in the intervention process, he may have felt more reluctant to follow the plan. Providing Darin with choices would have empowered him; therefore, increasing his desirability to carry out the intervention and improve his behavior.

A final explanation for the intervention's lack of success is treatment integrity. Treatment integrity is "the degree to which a treatment is implemented as planned" (Gresham, 1989, p. 37). The ineffectiveness of many prereferral interventions and consultation plans is due to poor treatment integrity. The level of treatment integrity is related to the outcome of the treatment. Several factors impact the integrity of treatments: (a) complexity of treatment, (b) time required to implement treatment, (c) materials and resources required for treatment, (d) number of treatment agents required, (e) perceived and actual treatment effectiveness, and (f) motivation of treatment agents (Gresham, 1989).

Complexity of treatment refers to the difficulty of the intervention. The more complex the treatment, the lower the integrity. Possibly the most popular reason why

teachers do not implement a plan is lack of time. Therefore, time consuming interventions are likely to be implemented with poor integrity. Interventions that require materials and resources outside of the typical classroom are also likely to be implemented with poor integrity. In addition, treatments that require more than one treatment agent become complex and time consuming and are likely to be implemented with a lack of integrity. Interventions that are perceived by consultees as effective tend to be implemented with greater integrity than those perceived to be ineffective. It is also hypothesized that treatments that produce rapid behavior change may be continued with greater treatment integrity than those interventions with slower behavior change. Lastly, teachers who refer students with no intent to carry out interventions implement treatments with poorer integrity than those who want to and expect to conduct interventions (Gresham, 1989).

When considering this literature, a number of factors that impact treatment integrity can be identified as contributing factors in the success of the self-monitoring intervention carried out in the present study. These factors included: (a) time required to implement the intervention, (b) materials and resources required for the intervention, (c) number of treatment agents involved in the intervention, and (d) motivation of treatment agents.

Over a 6-week period, the self-monitoring intervention required a total of 1 hour and 30 minutes of the mother's time, 4 hours of Teacher 1's time, and 2 hours and 50 minutes of Teacher 2's time. This is 25 minutes a week for the mother, 40 minutes a week for Teacher 1, and approximately 28 minutes a week for Teacher 2. According to their responses on the survey, Teacher 1 and Teacher 2 thought the self-monitoring training required too much from their schedules. The mother, however, reported that the self-monitoring training did not require too much time from her schedule.

Initially, Darin's mother, Teacher 1, and Teacher 2 were quite receptive to self-monitoring as an intervention. When the problem identification interview (PII) was completed and as baseline data were being collected, they showed enthusiasm for the intervention and were interested in learning about self-monitoring. The adults continued to remain receptive to self-monitoring through the parent and teacher training and the training of Darin. Even though the mother and two teachers were aware that it would take some time to see some results or benefits from the self-monitoring intervention, their attitudes toward the intervention changed dramatically once self-monitoring began. They did not experience immediate relief and were not interested in giving it more time to produce desired behavior changes.

Darin's mother found the self-monitoring training helpful in implementing the intervention and did not think it required too much time from her schedule. She felt as though it was somewhat true that she was able to construct an intervention for Darin in a short amount of time. Darin's mother did not believe the self-monitoring intervention was effective for his needs, and it is unlikely that she will use self-monitoring with other children with behavioral concerns. She was unsure of her ability to implement self-monitoring independently.

Teacher 1 and Teacher 2 both believed the self-monitoring training helped them implement the intervention, but reported that the training required too much time from their schedules. Teacher 2 indicated that the training took too much time from her schedule because it was ineffective for the child. Both teachers did, however, report that they were able to construct an intervention for Darin in a short amount of time. The teachers agreed that the intervention was ineffective for the child's needs but believed that it was somewhat likely that they would use self-monitoring with other children with

behavioral concerns. Both teachers believed they could implement a self-monitoring intervention independently in the future.

Jeffrey (1999) reported similar information as was presented in the above paragraph. In comparison to the present study's results, both the regular education teacher and the special education teacher in Jeffrey's (1999) study indicated that the self-monitoring training moderately helped them implement the intervention. The regular education teacher believed the training took too much time from her schedule, and the special education teacher reported that the training did not take too much time. As far as constructing an intervention for the child in a short amount of time, the regular education teacher indicated that she could not, and the special education indicated that she could. Both teachers believed they could implement self-monitoring independently in the future. The regular education teacher reported that it was unlikely that she would use self-monitoring with other children with academic concerns. The special education teacher reported that it was moderately true that she would use self-monitoring again for academic concerns. The teachers agreed that self-monitoring may be useful for students with behavioral concerns.

Neither Darin's mother nor his teachers reported self-monitoring to be user-friendly. Darin's mother defined parent-friendly as an intervention that is "not excessively time-consuming or hard to do." Teacher 1 did not provide a definition for teacher-friendly, but did state that "self-monitoring for 3 to 5-year-olds is not effective or practical." Teacher 2 defined teacher-friendly as "easy to implement." She also indicated that the user-friendliness of self-monitoring would depend on the age of the child. These results are similar to the findings in Jeffrey's (1999) research where the regular education teacher indicated that self-monitoring is not user-friendly and the special education teacher reported it be moderately user-friendly.



### Post Hoc

When the self-monitoring intervention was terminated, Darin's mother and teachers expressed continued concern for his behavior. The researcher, parent, and teachers maintained the consultation relationship and developed a second intervention for Darin. Darin's second intervention had four components: (a) ignoring aggressive behaviors, (b) providing verbal cues for appropriate behavior or good choices, (c) providing verbal reinforcement for appropriate behavior or good choices, and (d) maintaining consistency.

The adults ignored Darin's aggressive acts to the extent possible. They intervened only if he was a threat to himself or others. The adults verbally cued Darin for appropriate behavior. When Darin would begin to get upset, they would state "Make a good choice, Darin." Verbal reinforcement was also used after Darin demonstrated appropriate behavior. The adults would state "That was a good choice, Darin." or "You made a good choice. I am proud of you." The importance of consistency was stressed in this intervention. The parent, teachers, and aides were to maintain consistency when cueing for and reinforcing good choices, as well as when ignoring or handling aggressive behavior or negative choices.

This particular intervention was implemented for 13 days (2 1/2 school weeks). It was carried out only in the daycare setting because Darin's mother continued to show no concern for his behavior in the home setting. Unfortunately, there is no progress monitoring data to report for this intervention. The data were stored in a window sill in Darin's daycare classroom which flooded 1 week prior to the expected termination date of this second intervention destroying the materials.

The researcher continued to journal throughout the second intervention. Journal entries indicated that the adults felt as though they were experiencing some success during

the first week of the implementation of the intervention. However, a brief review of the data did not support what the teachers were reporting. The data indicated that Darin was increasing the frequency of appropriate behavior, but not decreasing the number of aggressive acts. Darin's teachers did not believe the intervention was effective the second and third week of implementation and independently terminated the intervention.

As with the self-monitoring intervention, there are several possible explanations for the lack of success with this intervention. One possible explanation is inconsistency. First of all, Darin's mother did not implement the intervention in the home. Therefore, there was a lack of consistency across settings. Secondly, numerous adults played a role in Darin's intervention. Explicit details and instructions regarding the intervention were provided to the adults, but it was difficult to maintain implementation consistency. For example, Teacher 1 and Teacher 2 were gone for the day at a convention and substitute teachers who were unaware of Darin's current intervention replaced them.

Another possible explanation for the intervention's lack of success is too many conflicts. Darin's brother had the chicken pox at the initiation of the intervention. Darin was staying with his maternal grandmother off and on and seeing less of his mother and younger brother. When Darin did see his nuclear family, a majority of the time was consumed with the care of his younger brother. As was stated before, Darin was a child who had a difficult time with change, and this is a big shift for a child his age.

Another conflict that impacted the implementation of the intervention was spring break. The week long break conflicted with the initiation of the second intervention. This conflict provided Darin with too much time without an intervention, and he may have unlearned or forgotten the skills he had developed up to that point.

## Conclusions

Self-monitoring of aggression in preschoolers has not been previously conducted. This study attempted to evaluate the effectiveness of self-monitoring as an intervention for one preschooler with aggressive behavior. The present study depicted the difficulties of applied research in natural settings. The negative findings for the usefulness of self-monitoring of aggression in preschoolers may or may not indicate its usefulness. Several hypotheses can be generated.

First, the adults who participated in the self-monitoring intervention were unable or unwilling to follow-through. The parent in this study was a single mother of two young children, attending undergraduate school full-time, and working as an aide at her children's daycare center. She may have been so preoccupied and overwhelmed with responsibilities that she did not have time to implement the self-monitoring intervention. The parent also had a different perception of the severity of the child's behavior in the home setting. This impacted her desire to implement self-monitoring in the home environment.

Second, the two teachers in the study may have been stressed and overworked. They worked long hours and were responsible for the children at the daycare, as well as the undergraduate students working as aides at the facility. Because the teachers were overwhelmed, they did not have adequate time to put into the self-monitoring intervention. The teachers also had different styles of operating and disciplining the children. This was a continual concern throughout the study and may have created a tense and non-supportive working relationship between the teachers. In addition to their positions at the daycare, both teachers had families with young children at home.

A third hypothesis was that self-monitoring is not a useful intervention for aggression in a preschool child whose family had other issues with which to cope. Darin

was from a single parent home and visited his father and paternal grandparents every other weekend. His mother and teachers shared that Darin would come home from his father's with a different disposition and tired. They believed this impacted the severity of Darin's behavior. In addition to this, Darin's mother endured many things over the course of the consultation relationship. She survived a hospitalization of and chicken pox with her 1-year-old son, completed a full load of classes, and maintained a position as an aide at the daycare.

A fourth hypothesis was that the preschooler was physically limited during the intervention. At the termination of the consultation relationship, it was learned that Darin had a hearing loss. A physician concluded that Darin's hearing was such a problem that he needed tubes in his ears, and that Darin's hearing loss could have played a major role in his behavior and impacted his ability to follow an intervention for his behavior.

Fifth, the researcher may have played too great a role in the consultation process. To conduct a successful intervention, it is important to provide the implementers with a sense of ownership of the intervention and empowerment in the consultation relationship. This sense of ownership is provided by encouraging the active participation of the implementers in the development of the intervention and materials. The consultees participated in the development of the intervention. The consultant/researcher created and supplied all materials for the intervention on an almost daily basis. This process made the consultees too dependent on the consultant for the implementation of self-monitoring. If the consultees were provided with more responsibilities, they may have taken more ownership of the process and, consequently, experienced more success.

The researcher/consultant of this particular study was of novice status, and her lack of experience may have contributed to the failure of the self-monitoring intervention. The consultant encouraged the consultees to have too much power in the development of

the intervention and reduced their ownership of the process by taking responsibility of gathering, developing, and circulating intervention materials. It was important for the mother and teachers to be involved in the development of Darin's self-monitoring program, but the consultant should have taken a more active role in the process. The consultees were given too much freedom in their decision making. The consultant should have provided more structure and made more suggestions and recommendations throughout the development of the intervention. The mother and teachers were empowered during the creation of Darin's intervention, and that ownership was removed at implementation of the intervention. Because the consultant took responsibility for creating and generating intervention materials, the consultees may have become too dependent on the consultant for carrying out the process. The consultant made an average of 3.5 contacts per week with the consultees. This is too much for a busy consultant. It is recommended that future researchers provide the consultant with a more active role in the initial stages of the consultation process and a less active role once the intervention begins.

The consultant allowed the intervention to be conducted all day with both teachers rather than just in the morning with Teacher 1 where the behavior was the biggest problem. This particular situation created triangulation which could have been prevented. To prevent triangulation in future research, it is recommended that there only be two consultees (the parent(s) and one teacher) engaged in the consultation relationship. Another preventative measure would be to provide an atmosphere and develop trusting relationships among consultees that encourage openness and honesty.

Lastly, the consultant developed lengthy parent and teacher self-monitoring training materials and provided a training that required too much time from the adults' schedules. It is suggested that parent and teacher, as well as student, training be shortened through the use of brief materials and a concise but informative presentation.

A final hypothesis is that the particular self-monitoring intervention used in the study is not an effective intervention for a preschooler with aggressive behaviors. Darin demonstrated that he was able to carry out the self-monitoring procedures with adult cueing for 2 days. He did not maintain the behavior in any of the subsequent 8 days. The self-monitoring intervention could have been improved if the functional analysis conducted at the start of the study assisted the design of the intervention. The function of Darin's behavior (adult attention) should have guided the development of the intervention. The particular intervention developed for Darin gave him adult attention for both aggressive behavior and appropriate behavior. It should have been developed so that he only received adult attention for appropriate behaviors.

#### Recommendations to Parent and Teachers

At the termination meeting, the researcher made some recommendations for future interventions if Darin's aggressive acts continued. It was suggested that a simple intervention be developed that is less cumbersome and time consuming for both Darin and the adults involved. The researcher recommended that the adults maintain intervention implementation consistency by limiting the number of adults involved in the intervention. It was also recommended that the intervention be conducted in both the home and daycare environments to achieve consistency across settings. The researcher suggested that Darin be provided with a variety of appropriate behaviors and given the opportunity to make choices regarding his behavior. Lastly, it was recommended that in the event that Darin chooses to demonstrate appropriate behavior, he be positively reinforced for doing so.

#### Ethical Follow-Up

The researcher followed-up on Darin in the home setting 3 weeks after the termination of the consultation relationship. Darin's mother reported that his ear operation was a success, and she was seeing changes in his behavior. Darin was

responding better to directions and indicating that he could hear what she was asking of him. The researcher followed-up on Darin in the daycare setting 5 weeks after the termination of the consultation relationship. Teacher 1 reported that Darin was still demonstrating aggressive acts and that his behavior continued to vary from day to day. Teacher 2 was unable to report on Darin's behavior because she did not teach at the daycare during the summer session.

### Future Research

Self-monitoring may or may not be a developmentally appropriate intervention for preschool children. Due to lack of treatment integrity, no comparisons to previous research regarding self-monitoring and the preschool population can be made. Future research questions include:

1. Is self-monitoring an appropriate and useful intervention for preschoolers with aggression?
2. Are target behaviors maintained when self-monitoring prompts are systematically removed?
3. Do treatment effects of self-monitoring generalize to other settings?

Additional factors that need to be addressed in future research are the advantages and disadvantages of conjoint behavioral consultation with the preschool population and time efficient self-monitoring training.

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**APPENDIX A**  
**PROBLEM IDENTIFICATION INTERVIEW**

## Problem Identification Interview for Behavioral Concerns

### 1. Opening

### 2. General statement to introduce discussion

**“What are your concerns regarding \_\_\_\_\_ behavior?”**

Summarize. Then: **“Is there anything else?”**

If yes, summarize. Then: **“Is there anything else?”**

Repeat **“Is there anything else?”** until you receive a NO response.

Summarize again. Then: **“These are all important areas and may be interrelated. Which one is of most concern to you? We will start with that one, and then come back to others if necessary.”**

### 3. Precise description of the priority behavior (ask for as many examples as possible)

**“What does he/she do when he/she is \_\_\_\_\_?”**

Summarize and then: **“What else does he/she do when he/she is \_\_\_\_\_?”**

Summarize and then: **“Is there anything else he/she does when he/she is \_\_\_\_\_?”**

Summarize and then: **“Can you think of anything else that he/she does when he/she is \_\_\_\_\_?”**

Summarize and then: **“Which of these is causing the most difficulty?”**

**“On a scale of 0 to 10, where 0 = no problem and 10 = severe problem, how severe is the problem for you?”**

### 4. Precise description of the settings in which the problem behavior occurs

**“Where does \_\_\_\_\_ do this?”**

**“Where else does he/she do this?”**

Summarize and then: **“Is there anywhere else that he/she does this?”**

Summarize and then: **“Can you think of anywhere else that he/she does this?”**

Summarize and then: **“Which setting is causing the most difficulty?”**

**“On a scale of 0 to 10, where 0 = no problem and 10 = severe problem, how severe is the problem for you in this setting?”**

5. Identify antecedents

**“What happens right before \_\_\_\_\_ occurs?”**

6. Sequential conditions analysis

**“When during the day does he/she \_\_\_\_\_?”**

**“Who is he/she with?”**

**“What is he/she suppose to be doing?”**

7. Identify consequent conditions

**“What happens after he/she \_\_\_\_\_?”**

**“What do the other children do when he/she \_\_\_\_\_?”**

**“What do you do when he/she \_\_\_\_\_?”**

8. Summarize and validate antecedent, sequential, and consequent conditions

9. Behavior strength

**“How often does he/she \_\_\_\_\_?”**

**“How long do his/her \_\_\_\_\_?”**

10. Summarize and validate behavior and behavior strength

11. Tentative definition of goal (question consultees)

**“How frequently could he/she \_\_\_\_\_ without causing problems?”**

12. Assets questions--determine what the child is good at

**“What does he/she do well?”**

13. Question about approach to teaching or existing procedures

**“How long are \_\_\_\_\_ and the other children doing/in (name problem activity/setting)?”**

**What type of instruction do you provide the children with?**

14. Summarize statement and validation

15. Directional statement to provide rationale for data recording

**“We need some record of his/her behavior, how often it occurs and when and where the behavior occurs the most. This record will help us to determine how frequently the behavior is occur, and may give us some clues to the nature of the problem. Also the record will help us decide whether the plan we initiate has been effective.**

16. Discuss data collection procedures

17. Summarize and validate recording procedures

**“We have agreed that you will record the number of times that he/she \_\_\_\_\_.” You will do this for \_\_ days and will use this form. Is this okay with you?”**



18. Establish a date to begin data collection

19. Establish a date of next appointment

20. Closing

**APPENDIX B**  
**REWARD SURVEY**

## Reward Survey

Name 3 things that you most like to do at home:

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

Name 3 special jobs that you would like to do at home:

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

What is your favorite food? \_\_\_\_\_

What is your favorite toy? \_\_\_\_\_

What is your favorite TV show? \_\_\_\_\_

**APPENDIX C**  
**PARENT AND TEACHER TRAINING MATERIALS**

## Parent and Teacher Training Materials

### Self-Monitoring

#### I. Definition

- A. Helps students become aware of behavior
- B. 2 step process
  - 1. Observe
  - 2. Record

#### II. Purpose

- A. Counting and changing behavior
- B. Encourage student responsibility
- C. Teach students control

#### III. Components and Procedures

- A. Cueing
- B. Observational (recording) procedures
- C. Recording devices
- D. Training
- E. Evaluating treatment
- F. Withdrawing treatment
- G. Maintenance and generalization

## **Self-Monitoring**

### **Definition:**

Self-monitoring is defined as “a self-management procedure that requires the student to observe specific aspects of his/her own behavior and provide an objective recording of those observations” (Shapiro & Cole, 1994, p. 7). It is an intervention that helps students become aware of their problem behaviors and the improvements they are trying to make. Self-monitoring is a two step process that requires an individual to observe his/her own behavior and record the presence of the target behavior based on those observations. Students learn to stop what they are doing, observe their behavior, and record what they observe.

### **Purpose:**

Persons engage in self-monitoring for the purpose of counting and changing target behaviors. Self-monitoring is used to increase individuals' awareness of particular behaviors so they can learn to take responsibility for their own behaviors. It empowers students to take control and teaches them to monitor their own behaviors, as opposed to an adult managing their behavior. Students accurately monitor their own behavior by learning to pay close attention to their actions. By counting and charting their own improvements, students can visually interpret their own progress. The motivation to change becomes intrinsic.

## Components and Procedures:

### Cueing

Cueing indicates to the individual that he/she should carry out the self-monitoring procedures. There are verbal and physical cues. Some examples include: a verbal statement from an adult, a tape recorder that plays tones at irregular intervals, or marked problems on a student's assignment. Cues serve as prompts for individuals to evaluate and record their behavior.

### Observational (recording) procedures

Observational procedures are the types of recording systems that can be used by individuals to self-observe. Persons may use a frequency count in which they record their behavior every time it occurs. Others may follow a time sampling procedure. This involves recording the presence of a target behavior at selected times rather than every occurrence. Other observation systems are available as well. Observational procedures define the system used to record target behaviors.

### Recording devices

Recording devices are the techniques individuals use to record their behavior. Self-monitoring is most effective when persons overtly record their behaviors. There are two categories of recording devices. The first category is paper-and-pencil systems. Individuals generally make a tally mark on a prepared recording sheet each time a target behavior occurs. The second category of recording methods is counting devices. Some examples include: moving beads on a string, placing rings on a peg, or moving items from

one location to another. Recording devices are the methods used to record and count target behaviors.

### Training

Individuals are trained by parents, teachers, and school psychologists to carry out self-monitoring. Trainers provide explicit explanations of the self-monitoring process and include the following elements in the training: (1) a clear and simple definition of the target behavior, (2) modeling of the target behavior, (3) a check for the individual's understanding of the target behavior, (4) a demonstration of the self-monitoring procedures, and (5) an observation of the individual practicing the procedures.

### Evaluating treatment

Data gathered by students tends to be an overestimation of the occurrence of appropriate behavior. Fortunately, this bias in self-assessment is of little concern. Positive changes in individuals' behaviors are often the result of the self-monitoring regardless of recording accuracy. It is important, however, to gather data that will allow an evaluation of intervention effects. Such data can be accumulated through periodic observations and recordings by parents, teachers, or trained observers when and where the individual carries out the self-monitoring procedures.

### Withdrawing treatment

Cues and recording devices are important to use when teaching the self-monitoring routine, but are not necessary after students become skilled in self-monitoring. Cueing and recording components are systematically removed once the individual reaches stable



goal attainment. School psychologists, parents, and teachers decide when this occurs and what elements of the program are removed.

#### Maintenance and generalization

Studies have indicated that training and practice in the use of self-monitoring can create a behavior change in the target behavior that can be maintained in the absence of overt aspects of the program. Two types of desirable generalization are possible with self-monitoring: (1) transfer to untreated but related behaviors, and (2) transfer to other settings.

## **Self-Monitoring of Physical Aggression as Target Behavior**

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### Step 1: Develop a plan for using self-monitoring.

- a. Review the problem and overall goal for the child.
- b. Determine target behavior and replacement behavior.
- c. Develop a general self-monitoring program.
- d. Plan to monitor the child's accuracy in recording.
- e. Identify ways to determine whether the intervention is helping the child reach his/her goal.
- f. Determine when to meet with the child to conduct training and finalize the plan.

### Step 2: Meet with the child to discuss and finalize the plan.

- a. Review the problem and goal with the child. Introduce the replacement behavior.
- b. Introduce the procedures to be followed.
  - i. Introduce the self-monitoring system to the child.
  - ii. Model what the child should be doing using a recording example.
  - iii. Require the child to practice recording procedures with a recording example.
  - iv. Give feedback on child's performance.
  - v. Determine when and how often the child will engage in the self-monitoring procedure.
  - vi. Discuss the goal with the child and help the child make or choose a recording device.

- c. Review everyone's roles and responsibilities.
  - i. Have the child practice the steps of the self-monitoring procedure.
  - ii. Decide what date the child will begin the self-monitoring procedure.
  - iii. Schedule a follow-up meeting with the child to discuss his/her progress.
  - iv. Review the schedule and roles and responsibilities of everyone involved.
- d. Conclude the training with words of encouragement.

Step 3: Implement the plan.

- a. Encourage child effort.
- b. Make periodic revisions and adjustments to the plan as necessary.
- c. When the child demonstrates consistent success, fade the intervention.

### Case Example of Physical Aggression as Target Behavior

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#### Step 1: Develop a plan for using self-monitoring.

- a. Review the problem and overall goal for the child.

Bobby is a 4-year-old at Sunnyside Preschool. For the most part, Bobby interacts positively with his teacher, Mrs. Werner, and peers. There are, however, times when Bobby loses control of his emotions and becomes physically and verbally aggressive. At this point, he will bite, hit, yell at, or defy Mrs. Werner or his classmates. Because these behaviors are occurring on a daily basis, Mrs. Werner visits with Bobby's parents, Mr. and Mrs. Hansen, about her concerns. After a discussion with Mr. and Mrs. Hansen, Mrs. Werner learns that Bobby's behavior is a problem at home as well. Bobby's parents share with Mrs. Werner that he becomes physically and verbally aggressive at home with both his parents and sibling. Mr. and Mrs. Hansen are seeing the same behaviors at home that Mrs. Werner is seeing in her room. Both Bobby's parents and teacher have talked with him about his behavior, but it has done little good. These behaviors have been occurring since the beginning of the year and have not improved.

Mr. and Mrs. Hansen and Mrs. Werner decide to request the assistance of a school psychologist from the local Area Education Agency. Ms. Pope is assigned to Bobby's case and visits with Bobby's parents and teacher about their concerns. She then decides to schedule a time with meet with Mr. and Mrs. Hansen and Mrs. Werner to complete a problem identification interview (PII). Ms. Pope explains that a PII enables them to identify and define their concerns regarding Bobby's behavior.

The PII with Mr. and Mrs. Hansen and Mrs. Werner indicates that Bobby is most aggressive when he is asked to do something he doesn't want to do. Rather than doing what is asked of him, he will hit, bite, yell, or defy. According to Mr. and Mrs. Hansen these behaviors occur on an average of 3 times a day at home. Mrs. Werner indicates that these behaviors occur on an average of 4 times a day at preschool. They state that their biggest concern at this time is Bobby's physically aggressive behavior. Physically aggressive behavior is defined as biting and hitting. The parents state that the physical aggression is happening 2, and sometimes 3, out of the 3 aggressive acts a day at home. Bobby's teacher indicates that the physically aggressive behavior is occurring 3 out of the 4 aggressive acts a day at preschool. Mr. and Mrs. Hansen and Mrs. Werner would like Bobby's physical aggression to decrease to zero times a day.

- b. Determine target behavior adults will monitor and replacement behavior child will monitor.

Bobby demonstrates both physical and verbal aggression. In the PII, Bobby's parents and teacher indicated to Ms. Pope that the biggest concern is physical aggression, defined as hitting and biting. Based on this information, Ms. Pope suggests to the parents and teacher that Bobby begin a self-monitoring program in which he monitors his own behavior. Because of the nature of the target behavior, she also suggests that Bobby be taught a replacement behavior for his hitting and biting. She explains that it is important for Bobby to learn appropriate ways to express his emotions. After some discussion, Bobby's parents, teacher, and Ms. Pope decide that Bobby's replacement behaviors should be clapping his hands or marching. Bobby will record his replacement behavior while the adults record his physical aggression. Because Bobby is at a critical age of learning and development, it is also important for him to carry out the self-monitoring intervention in both the home and preschool environments. All parties agree that the self-monitoring will be conducted in both settings to provide consistency that will aid in Bobby's learning.

- c. Develop a general self-monitoring program.

Because of Bobby's developmental age, Mr. and Mrs. Hansen, Mrs. Werner, and Ms. Pope agree that it is important to include a cueing system in his self-monitoring intervention. Bobby may need a visual and/or verbal cues to prompt him to evaluate and record his behavior. All parties agree that a visual cue such as a stop sign is an appropriate cue to prompt Bobby to evaluate his behavior. All parties agree that a verbal cue such as, "Good job, Bobby. Please go and mark your behavior on your sheet.", is appropriate. Both the parents and teacher will use this or a similar phrase as Bobby's cue to record his replacement behavior. Because self-monitoring is most effective when the individual overtly records his/her behavior, it is determined that Bobby will manually record his own behavior. Ms. Pope provides the parents and teacher with examples of recording devices to use with Bobby during student training. These examples help Bobby initially practice his recording and will provide examples of what a recording device should include. Bobby will have the opportunity to create or choose his own recording device with the assistance of parents and teacher in student training. By creating or choosing his own recording device, Bobby will become more invested in the program and take ownership of the self-monitoring process.

Bobby's self-monitoring process will consist of Bobby recording the occurrence of the replacement behavior each time it occurs. He will be visually cued to evaluate his behavior and verbally cued by to record this behavior. Mr. and Mrs. Hansen and Mrs. Werner will record the occurrence of Bobby's hitting and biting.

d. Plan to monitor the child's accuracy in recording.

Mr. and Mrs. Hansen, Mrs. Werner, and Ms. Pope decide that initially Bobby will need frequent adult guidance as he learns to monitor his replacement behavior. In addition to recording his physically aggressive behavior, Bobby's parents and teacher agree to watch him record his replacement behavior and provide direct feedback, including recording corrections if necessary, for the first week of the self-monitoring intervention. If he is successfully recording his behavior after the first week, they will discontinue the daily checks and only check his accuracy and give feedback periodically.

e. Identify ways to determine whether the intervention is helping the child reach his/her goal.

Ms. Pope plans to meet once a week with both Mr. and Mrs. Hansen and Mrs. Werner to review Bobby's progress in comparison to his goal. She will also record Bobby's and his parents' and teacher's data and graph it to monitor his progress. Any revisions that need to be made to the intervention will also be discussed at this time.

f. Determine when to meet with the child to conduct training and finalize the plan.

Mr. and Mrs. Hansen decide to work with Bobby on Saturday. Mrs. Werner receives permission from Bobby's parents to meet with him at the end of the day on the following Monday. Both Bobby's parents and teacher will discuss his aggressive behavior problem with him, explain the self-monitoring intervention to him, and share with him the goal they have chosen for him. They will also conduct the student training.

Step 2: Meet with the child to discuss and finalize the plan.

- a. Review the problem and goal with the child. Introduce the replacement behavior.

Mr. and Mrs. Hansen work with Bobby on Saturday.

**Mrs. Hansen:** Mrs. Werner, your dad, and I are concerned about your behavior and want to help you change the way you have been acting. Tell your dad and I what you have been doing at home and at preschool that has caused you some problems.

**Bobby:** I get mad at you and dad and Melanie (older sister).

**Mrs. Hansen:** What happens when you get mad?

**Bobby:** I hit and bite.

**Mr. Hansen:** That is right. What happens at preschool with Mrs. Werner and the other kids?

**Bobby:** I get mad at them too.

**Mr. Hansen:** Do you hit and bite them too?

**Bobby:** Nods head yes.

**Mrs. Hansen:** Bobby, do you think we like it when you hit and bite us?

**Bobby:** Shakes head no.

**Mr. Hansen:** It hurts when you hit and bite us, Bobby. Do you want to hurt your mom, Melanie, Mrs. Werner, your friends at preschool, or me?

**Bobby:** No.

**Mrs. Hansen:** What happens when you hit or bite someone when you get mad?

**Bobby:** I get in trouble.

**Mrs. Hansen:** Do you like it when you get in trouble?

**Bobby:** Shakes head no.

**Mrs. Hansen:** When you get in trouble, Bobby, it is not because you are mad. It is okay to get mad. Everybody gets mad sometimes. I get mad. Your dad gets mad. Melanie gets mad. What we don't do is hit or bite people when we get mad. The reason you get into trouble at home and at preschool is because you hit and bite others when you are mad. Do you understand?

**Bobby:** Nods head yes.

**Mr. Hansen:** You know Bobby, there are other things you can do when you get mad that don't hurt anybody. You can clap your hands like this (demonstrate), or march around like this (demonstrate). Will you try these for me? Show me how you can clap your hands and march around when you are mad.

**Bobby:** Demonstrates clapping and marching.

**Mr. Hansen:** Good.

**Mrs. Hansen:** Let's make a plan together that will help you stop hitting and biting others.

Mrs. Werner meets with Bobby the following Monday.

**Mrs. Werner:** Bobby, I have been talking with your parents about your behavior and we want to help you change some things about how you behave. I know that you have already talked with your mom and dad about this, but I want you to tell me what it is about your behavior that is a problem.

**Bobby:** I hit and bite.

**Mrs. Werner:** That is right, Bobby. You hit and bite people when you get mad. What happens when you hit and bite?

**Bobby:** I don't get to play.

**Mrs. Werner:** Yes. I make you sit in a chair by yourself to do activities rather than working with the other kids. Do you like that?

**Bobby:** Shakes head no.

**Mrs. Werner:** Would you like to be able to do what the other kids are doing while you are sitting alone?

**Bobby:** Nods head yes.

**Mrs. Werner:** I would like you to be able to do all the activities we have here at preschool. Do you think that your hitting and biting hurts others?

**Bobby:** Nods head yes.

**Mrs. Werner:** Do you want to hurt other people?

**Bobby:** Nods head no.

**Mrs. Werner:** I understand that you get mad, Bobby, and that is okay. Everybody gets mad. I get mad. Your mom and dad get mad. The other kids here at preschool get mad. It is okay to get mad, but it is not okay to hit or bite. I don't hit or bite when I am mad. Your mom and dad don't hit or bite when they are mad. You cannot hit or bite others. Do you understand?

**Bobby:** Nods head yes.

**Mrs. Werner:** There are other things you can do when you get mad. You can clap your hands or march (demonstrate). When you clap your hands or march around you don't hurt anybody, right?

**Bobby:** Right.

**Mrs. Werner:** Show me how you can clap your hands when you are mad.

**Bobby:** Demonstrates clapping his hands.

**Mrs. Werner:** Good! Show me how you can march around when you are mad.

**Bobby:** Demonstrates marching.

**Mrs. Werner:** Excellent! Let's make a plan together, like you did with your mom and dad, that helps you stop hitting and biting when you get mad.



b. Introduce the procedures to be followed.

i. Introduce the self-monitoring system to the child.

**Mr. or Mr. Hansen/Mrs. Werner:** Bobby, we/I have thought of a plan that we can form together. It is called self-monitoring. Self-monitoring is a program that helps you think about your hitting and biting. It will teach you to clap your hands or march when you are mad, rather than hitting or biting. It will also help you keep track of how many times you clap your hands or march around. We will make a recording sheet for you for you to mark on each time you clap or march. (show child an example of a recording sheet) We/I will help you remember to mark your behavior on a sheet like this (point to an example) by asking you to record your behavior after you clap your hands or march around. You only need to mark on the paper when you clap your hands or march around. Together we will make or choose a sheet, like one of these (point again to examples), for you to use.  
\*Check for child's understanding.\*

ii. Model what the child should be doing using a recording example.

**Mr. or Mrs. Hansen/Mrs. Werner:** Now I want to show you what you will be doing. First of all, this is a recording sheet. It has 10 happy faces on it. These happy faces remind you that you do want to clap your hand or march around when you are mad. Each time you clap or march, you need to draw a line through one of the happy faces. We/I will remind you to draw a line through one happy face each time you clap your hands or march around. You need to think about your behavior, and do this every time you clap or march. At the end of each day we will look at your recording sheet and count the number of faces that are crossed off. We will put a smiling face sticker on a graph that looks like this (show child the graph) to mark the number of times you clapped your hands or marched. You want to be able to put a sticker up here toward the top of the graph.  
\*Check for child's understanding.\*

- iii. Require the child to practice recording procedures with a recording example.

Parents and teacher give Bobby multiple scenarios in which they visually cue him to demonstrate his replacement behaviors of clapping or marching or choose to hit or bite. If the clapping of hands or marching around are utilized, they verbally cue Bobby to record his behavior. As he does this, Mr. and Mrs. Hansen and Mrs. Werner watch for accurate recording of the replacement behaviors. After they run through several examples, they help Bobby count and graph his behavior on the line graph. This step is repeated multiple times to ensure Bobby's understanding.

- iv. Give feedback on the child's performance.

**Mr. or Mrs. Hansen/Mrs. Werner:** You did a super job, Bobby. It seems to us/me that you understand what you are suppose to be doing. You did a great job of crossing off a happy face each time you clapped your hands or marched around. I am happy with your work and think you will do a good job when we start the project.

- v. Determine when and how often the student will engage in the self-monitoring procedure.

**Mr. or Mrs. Hansen/Mrs. Werner:** Bobby, we have practiced your new program, and we all understand what you will be doing. We would like to start your program on Tuesday. Is that okay with you?

**Bobby:** Nods head yes.

**Mr. or Mrs. Hansen/Mrs. Werner:** Do you feel ready to start on Tuesday?

**Bobby:** Yes.

**Mr. or Mrs. Hansen/Mrs. Werner:** Tuesday morning we/I will have a recording sheet dated and ready for you to use. Remember, you need to draw a line through a happy face each time you clap your hands or march around when you are mad.

**\*Pick a place to keep the recording sheet where the child can easily get to it. Keep it in the same place throughout the intervention. It may be helpful to have a writing utensil of the child's choice available as well.\***

- vi. Discuss the goal with the child. Help the student make or choose a recording device.

**Mr. or Mrs. Hansen/Mrs. Werner:** We have chosen a goal for you. Right now, you hit or bite 2 to 3 times a day. Because hitting and biting are hurtful to others, we want you to stop hitting and biting all together. Your goal is to hit or bite zero times a day. That means that you should never hit or bite anyone.

*\*Check for child's understanding.\**

**Mr. or Mrs. Hansen/Mrs. Werner:** Let's make (or choose) a recording sheet to use.

- c. Review everyone's roles and responsibilities.

- i. Have the child practice the steps of the self-monitoring procedure.

After Bobby and his parents and teacher make (or choose) a recording device, he practices the self-monitoring process with his own recording sheet. Bobby verbally walks himself and his parents and teacher through the process as he practices. Mr. and Mrs. Hansen and Mrs. Werner provide him with feedback to reinforce his accurate performance.

- ii. Decide what date the child will begin the self-monitoring procedure.

Bobby's parents and teacher remind him that he will begin to use the recording sheet on Tuesday.

- iii. Schedule a follow-up meeting with the child to discuss his/her progress.

For the first week, Mr. and Mrs. Hansen and Mrs. Werner will watch Bobby record his behavior and check for accuracy. After the first week, only periodic accuracy checks will be made. This information is shared with Bobby. Each day the parents and teacher will help Bobby graph his behavior. This time will also be used to discuss Bobby's progress with him.

- iv. Review the schedule and roles and responsibilities of everyone involved.

Mr. and Mrs. Hansen and Mrs. Werner again remind Bobby that the program will begin on Tuesday. They also review with Bobby what he is suppose to do and what they are going to do make this intervention a success.

\*Check for child's understanding.\*

- d. Conclude the training with words of encouragement.

**Mr. or Mrs. Hansen/Mrs. Werner:** Bobby, we are/I am very excited about this plan. We/I hope that you realize that we are/I am here to help you. If you have any problems or questions you can talk to us/me. We/I think that you deserve to learn how to control your behavior. We/I know you can do it. We are/I am looking forward to seeing you make improvements.

Step 3: Implement the plan.

a. Encourage child effort.

Mr. and Mrs. Hansen and Mrs. Werner should continually provide feedback to Bobby on his accurate performance of self-monitoring. Once Bobby begins to make progress, they will comment on his success.

b. Make periodic revisions and adjustments to the plan as necessary.

Ms. Pope will review Bobby's progress with his parents and teacher during their weekly scheduled meetings. If Bobby fails to make progress, additions or revisions will be made to the plan that might help him. If Bobby makes progress, they will monitor the intervention through graphing to determine when and what parts of the intervention will be systematically faded.

c. When the child demonstrates consistent success, fade the intervention.

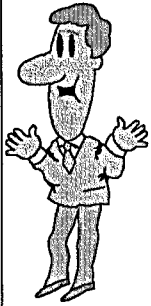
After Bobby displays consistent success, which involves stable goal attainment for four days consecutively, Ms. Pope, Mr. and Mrs. Hansen, and Mrs. Werner will consider fading a component of the self-monitoring intervention. This decision will be based on Bobby's progress with and attitude toward the intervention. The decision will be made by Ms. Pope, Mr. and Mrs. Hansen, and Mrs. Werner and shared with Bobby.

d. Once the intervention has been faded, provide continued follow-up, support, and encouragement.

After the self-monitoring procedure is completely eliminated, Mr. and Mrs. Hansen and Mrs. Werner will continue to provide Bobby will feedback on his behavior.

# Sample Recording Devices

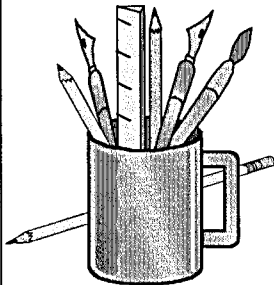
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**APPENDIX D**  
**AIDE TRAINING MATERIALS**

## Aid Training Materials

### Self-Monitoring

#### I. Definition

- A. Helps students become aware of behavior
- B. 2 step process
  - 1. Observe
  - 2. Record

#### II. Purpose

- A. Counting and changing behavior
- B. Encourage student responsibility
- C. Teach students control

#### III. Components and Procedures

- A. Cueing
- B. Observational (recording) procedures
- C. Recording devices
- D. Training
- E. Evaluating treatment
- F. Withdrawing treatment
- G. Maintenance and generalization



## **Self-Monitoring**

### **Definition:**

Self-monitoring is defined as “a self-management procedure that requires the student to observe specific aspects of his/her own behavior and provide an objective recording of those observations” (Shapiro & Cole, 1994, p. 7). It is an intervention that helps students become aware of their problem behaviors and the improvements they are trying to make. Self-monitoring is a two step process that requires an individual to observe his/her own behavior and record the presence of the target behavior based on those observations. Students learn to stop what they are doing, observe their behavior, and record what they observe.

### **Purpose:**

Persons engage in self-monitoring for the purpose of counting and changing target behaviors. Self-monitoring is used to increase individuals' awareness of particular behaviors so they can learn to take responsibility for their own behaviors. It empowers students to take control and teaches them to monitor their own behaviors, as opposed to an adult managing their behavior. Students accurately monitor their own behavior by learning to pay close attention to their actions. By counting and charting their own improvements, students can visually interpret their own progress. The motivation to change becomes intrinsic.

## Components and Procedures:

### Cueing

Cueing indicates to the individual that he/she should carry out the self-monitoring procedures. There are verbal and physical cues. Some examples include: a verbal statement from an adult, a tape recorder that plays tones at irregular intervals, or marked problems on a student's assignment. Cues serve as prompts for individuals to evaluate and record their behavior.

### Observational (recording) procedures

Observational procedures are the types of recording systems that can be used by individuals to self-observe. Persons may use a frequency count in which they record their behavior every time it occurs. Others may follow a time sampling procedure. This involves recording the presence of a target behavior at selected times rather than every occurrence. Other observation systems are available as well. Observational procedures define the system used to record target behaviors.

### Recording devices

Recording devices are the techniques individuals use to record their behavior. Self-monitoring is most effective when persons overtly record their behaviors. There are two categories of recording devices. The first category is paper-and-pencil systems. Individuals generally make a tally mark on a prepared recording sheet each time a target behavior occurs. The second category of recording methods is counting devices. Some examples include: moving beads on a string, placing rings on a peg, or moving items from

one location to another. Recording devices are the methods used to record and count target behaviors.

### Training

Individuals are trained by parents, teachers, and school psychologists to carry out self-monitoring. Trainers provide explicit explanations of the self-monitoring process and include the following elements in the training: (1) a clear and simple definition of the target behavior, (2) modeling of the target behavior, (3) a check for the individual's understanding of the target behavior, (4) a demonstration of the self-monitoring procedures, and (5) an observation of the individual practicing the procedures.

### Evaluating treatment

Data gathered by students tends to be an overestimation of the occurrence of appropriate behavior. Fortunately, this bias in self-assessment is of little concern. Positive changes in individuals' behaviors are often the result of the self-monitoring regardless of recording accuracy. It is important, however, to gather data that will allow an evaluation of intervention effects. Such data can be accumulated through periodic observations and recordings by parents, teachers, or trained observers when and where the individual carries out the self-monitoring procedures.

### Withdrawing treatment

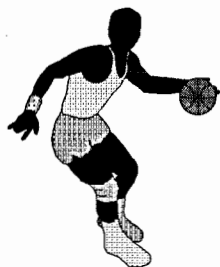
Cues and recording devices are important to use when teaching the self-monitoring routine, but are not necessary after students become skilled in self-monitoring. Cueing and recording components are systematically removed once the individual reaches stable

goal attainment. School psychologists, parents, and teachers decide when this occurs and what elements of the program are removed.

#### Maintenance and generalization

Studies have indicated that training and practice in the use of self-monitoring can create a behavior change in the target behavior that can be maintained in the absence of overt aspects of the program. Two types of desirable generalization are possible with self-monitoring: (1) transfer to untreated but related behaviors, and (2) transfer to other settings.

## Darin's and Adults' Recording Devices



# Darin

For staff recording of aggressive behavior.

**physically acting out: crying, falling down or throwing self on the floor, waving hands and shaking body, hitting, or biting**

**APPENDIX E**  
**PARENT AND TEACHER SURVEY**

### Parent and Teacher Survey

Reproduced with permission from Jeffrey, S. S. (1999). The efficiency and effectiveness of self-monitoring for increasing fourth graders' work completion. Unpublished manuscript, University of Northern Iowa.

Please read each statement below. Circle the number that best represents your assessment.

**1. Self-monitoring training helped me implement the intervention.**

1	2	3	4	5
Not true at all		Moderately true		Very true

**2. Self-monitoring training required too much time from my schedule.**

1	2	3	4	5
Not true at all		Moderately true		Very true

**3. I was able to construct an intervention for the child in a short amount of time.**

1	2	3	4	5
Not true at all		Moderately true		Very true

**4. The intervention was effective for the child's needs.**

1	2	3	4	5
Not true at all		Moderately true		Very true

**5. I will use self-monitoring with other children with behavioral concerns.**

1	2	3	4	5
Not true at all		Moderately true		Very true

**6. I think I can implement self-monitoring independently in the future.**

1	2	3	4	5
Not true at all		Moderately true		Very true

**7. Self-monitoring is a "parent/teacher-friendly" intervention technique.**

1	2	3	4	5
Not true at all		Moderately true		Very true

**\*Write below what "parent/teacher-friendly" means to you.**